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United States
Department of
Agriculture

Natural
Resources
Conservation
Service

Washington Basin Outlook Report May 1, 2000



Basin Outlook Reports

and

Federal - State - Private

Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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The Natural Resources Conservation Service provides the leadership and coordination in collecting and monitoring climatic and snowpack data from remote mountain sites through a Federal, State, and local partnership.

Problem

The benefits of this program reach across individual, community, city and state boundaries. In the 1930's and on various occasions since it was determined by public input that the Federal Government was the best entity for the application of this program. Enabling data and products to be made available, for no cost, to the general public.

The Snow Survey Program is a congressional line item in the annual budget. However, recent budget issues have forced Program Managers to make drastic decisions concerning the safe and complete operation of the program. Budget reductions have affected all aspects of the program including:

- Purchase of replacement components
- Employee hiring
- SNOTEL site repair
- Timely snow surveys
- Product development
- Computer Software and Hardware procurement
- Vehicle repair and replacement
- Technician travel and overtime
- Safety equipment budgets

Current Situation

NRCS collects data from 52 SNOTEL (automated SNOWpack TELEmetry Network) sites and 100 manually measured snow courses in Washington. Currently, there are over 650 SNOTEL sites in the Western United States. NRCS collects, maintains, and archives the data for these sites.

A typical SNOTEL site measures snow water equivalent, precipitation and air temperature (maximum, minimum and average), snow depth, soil moisture and temperature, wind speed and direction, solar radiation, and relative humidity.

The SNOTEL Network and water supply forecasts are critical for wise water management in Washington and other Western States. Data are used for many purposes including:

- Forecasting variable seasonal spring and summer water supplies

- Managing and operating dams and reservoirs for flood control, water supply and hydropower generation
- Flood warning information
- Peak streamflows and low flow forecasts
- Drought mitigation
- Winter and summer recreation
- Maintaining minimum streamflows
- Avalanche forecasting
- Rangeland readiness conditions
- Wildlife and fish habitat management

The Washington Snow Survey Program is 10% cooperator funded. Volunteer cooperators measure numerous snow courses near the first of each month, providing \$30,000 to \$40,000 of in-kind services.

After compiling and analyzing the data, NRCS publishes the "Washington Basin Outlook Report" from January through June and distributes it, electronically and by hard copy mail, to over 500 agencies and individuals. Snow survey information is also published in many local newspapers across the State and is featured in radio and television newscasts. The staff responds to dozens of media inquiries each year.

Future Needs

Water availability and quality will be a significant resource issue in the 21st Century. Customer requests for new snowpack analysis and water supply forecasts are the impetus to maintain and expand data collection to meet increasing demands.

In Washington, 50-60 additional SNOTEL stations with "event reporting" and additional climate instruments have been identified as needed to meet growing needs. These proposed sites would replace many of the manual snow courses and provide more low elevation monitoring sites in rain-on-snow flood prone environments.

Recommendation

NRCS will continue to request Department and Congressional budget approval for this program. Constituent support of the program is required in order to facilitate the budget appropriations process and ensure adequate funding for today and into the future.

A Snow Survey web site provides hourly and historic data, and other useful analysis and information at <http://www.wa.nrcs.usda.gov/nrcs/CoopSnoSrvy.htm>
Or comment to: scott.pattee@wa.usda.gov

Washington Water Supply Outlook

May 2000

General Outlook

April brought welcome sunshine and warm spring temperatures. The down side to this is that most of Washington received below average precipitation for the month. Average temperatures were 1-4 degrees above normal last month. Average minimum temperatures have remained near normal on the westside and 2-4 degrees above normal east of the Cascade Mountains for the water year. SNOTEL sites below 4000 feet are beginning to show rapid melt however cooler nighttime temperatures are helping to maintain higher elevation snowpack.

Snowpack

The May 1 statewide SNOTEL readings remained above average at 116%. Some Washington basins have melted out. Among the basins with remaining measurable snowpack the Similkameen River snow surveys from Canada reported the lowest readings at 51% of average. Readings taken in the Lewis River Basin reported the highest at 184% of average. Westside averages from SNOTEL and May 1 snow surveys included the North Puget Sound river basins with 98%, the Central Puget river basins with 122%, and the Olympic basins with 82%. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 107% and the Wenatchee area with 100%. Snowpack in the Spokane River Basin was at 84% and the Pend Oreille River Basin, including Canadian data, had 82% of average. Maximum snow cover in Washington was at Paradise Park SNOTEL near Mount Rainer with a water content of 84.5 inches. This site would normally have 61.8 inches of water content on May 1. Last year at this time Paradise Park had 107.9 inches of snow water.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE	ONE MONTH CHANGE
Spokane	66	84	-21
Newman Lake	69	92	-56
Pend Oreille	64	73	-14
Okanogan	59	82	-10
Methow	51	83	-12
Similkameen	42	51	-20
Wenatchee	52	97	-4
Chelan	63	103	-4
Stemilt Creek	0	0	0
Yakima	57	107	-5
Ahtanum Creek	42	106	10
Walla Walla	47	78	-34
Lower Snake	61	83	-24
Cowlitz	66	119	1
Lewis	58	184	27
White	64	113	-5
Green	76	139	33
Puyallup	64	113	-5
Cedar	55	92	-37
Snoqualmie	79	108	-4
Skykomish	85	94	-28
Skagit	47	83	-15
Baker	78	112	-4
Nooksack	55	99	-22
Olympic Peninsula	33	82	-17

Precipitation

During the month of April, the National Weather Service and Natural Resources Conservation Service climate stations showed mostly below average precipitation for all basins but a few. The highest percent of average in the state was at Spokane Airport. Spokane reported 182% of average for a total of 2.16 inches. The average for this site is 1.19 inches for April. Averages for the water year varied from 116% of average in the Walla Walla River Basin to 91% of average in the Okanogan - Methow river basins. Most basins in the state reported a net decrease in water year averages at the end of the month. The highest decrease was reported in the Lower Snake River Basin, dropping 8%. The Colville-Pend Oreille River Basin showed a net increase of only 2% over last month.

RIVER BASIN	APRIL PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE	ONE MONTH CHANGE
Spokane	109	113	-1
Colville-Pend Oreille	101	107	2
Okanogan-Methow	50	91	-4
Wenatchee-Chelan	50	103	-4
Upper Yakima	70	104	-2
Lower Yakima	76	113	-3
Walla Walla	63	116	-3
Lower Snake	60	103	-8
Cowlitz-Lewis	77	108	-2
White-Green-Puyallup	76	96	-2
Central Puget Sound	91	109	-2
North Puget Sound	84	103	-1
Olympic Peninsula	76	109	-3

Reservoir

Reservoir storage in the Yakima Basin was 686,600-acre feet, 110% of average for the Upper Reaches and 217,800-acre feet, 137% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 129% of average for May 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 334,500-acre feet, 136% of average and 140% of capacity; Chelan Lake, 329,500-acre feet, 73% of average and 49% of capacity; and Ross Lake at 111% of average and 51% of capacity.

BASIN	PERCENT OF CAPACITY	PERCENT OF AVERAGE
Spokane	140	136
Colville-Pend Oreille	43	146
Okanogan-Methow	88	129
Wenatchee-Chelan	49	73
Upper Yakima	82	110
Lower Yakima	94	137
North Puget Sound	51	111

For more information contact your local Natural Resources Conservation Service office.

Streamflow

May forecasts indicate near normal summer flows for most streams in the state. They vary from 136% of average for Chamokane Creek near Long Lake to 80% of average for Samilkameen Creek near Nighthawk. May forecasts for some Western Washington streams include the Cedar River near Cedar Falls, 98%; Green River, 102%; and Skagit River, 94%. Some Eastern Washington streams include the Yakima River near Parker, 93%; Wenatchee River at Peshastin, 96%; and Spokane River near Post Falls, 83%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation, streamflow and SOI data collected and coordinated by organizations cooperating with NRCS.

Spring runoff from normal snowmelt brought dramatic increases to most all streams in the state last month. Streamflows reported for April varied from well above to near normal. The Similkameen River near Nighthawk had the highest flows with 185% of average. The Lewis River at Ariel with 92% of average, was the lowest in the state. Other streamflows were the following percentage of average: the Priest River, 146%; the Columbia at The Dalles, 128%; the Spokane at Spokane, 149%; the Columbia below Rock Island Dam, 136%; the Cowlitz at Castle Rock, 107%; and the Snake River below Ice Harbor Dam, 129%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
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Spokane	83-86
Colville-Pend Oreille	83-136
Okanogan-Methow	80-93
Wenatchee-Chelan	95-115
Upper Yakima	91-96
Lower Yakima	93-115
Walla Walla	98-102
Lower Snake	80-91
Cowlitz-Lewis	94-115
White-Green-Puyallup	98-102
Central Puget Sound	98-104
North Puget Sound	94-102
Olympic Peninsula	92-93

STREAM	PERCENT OF AVERAGE APRIL STREAMFLOWS
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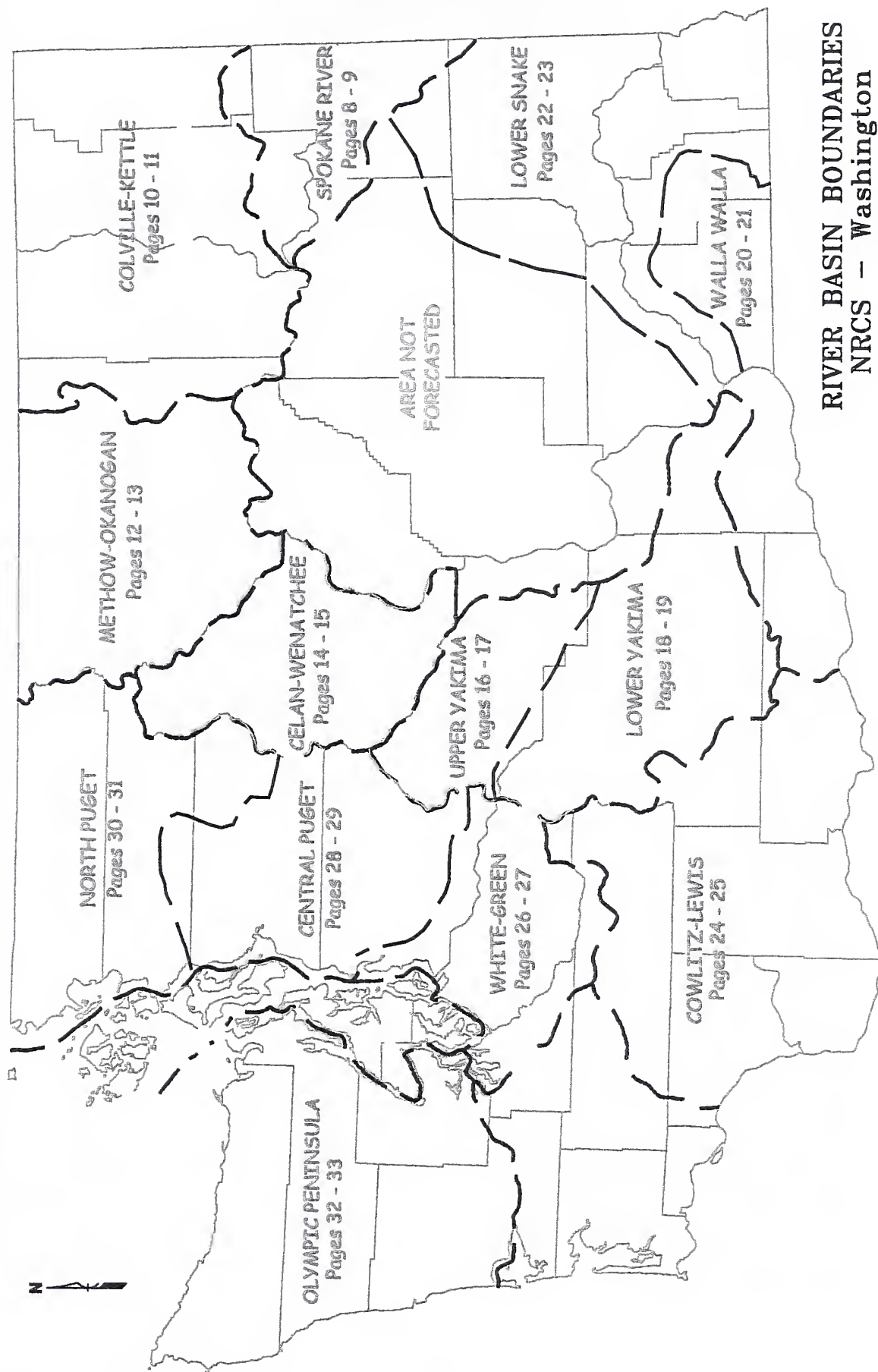
Pend Oreille Below Box Canyon	128
Kettle at Laurier	181
Columbia at Birchbank	127
Spokane at Long Lake	157
Similkameen at Nighthawk	185
Okanogan at Tonasket	153
Methow at Pateros	178
Chelan at Chelan	150
Wenatchee at Pashastin	138
Yakima at Cle Elum	157
Yakima at Parker	163
Naches at Naches	166
Grande Ronde at Troy	133
Snake below Lower Granite Dam	117
SF Walla Walla near Milton Freewater	168
Lewis at Ariel	92
Cowlitz below Mayfield Dam	114
Skagit at Concrete	122

For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

MAY 2000

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
ABERDEEN LAKE CAN.	4000	4/28/00	0	.0	--	1.5	MARTEN LAKE AM	3600	4/26/00	162	80.0	--	75.8
ALPINE MEADOWS PILL	3500	5/01/00	---	55.0	34.0	--	MEADOWS CABIN	1900	4/27/00	0	.0	.0	1.1
AMBROSE	6480	4/27/00	12	4.5	14.0	12.1	MEADOWS PASS PILL	3240	5/01/00	---	14.6	28.5	21.0
ASHLEY DIVIDE	4820	4/29/00	0	.0	.3	1.0	MERRITT	2140	4/27/00	0	.0	12.8	3.6
BADGER PASS PILL	6900	5/01/00	---	26.1	47.0	37.8	MICA CREEK PILL	4750	5/01/00	---	11.9	26.1	--
BAREE CREEK	5500	4/26/00	82	37.9	58.8	43.0	MINERAL CREEK	4000	4/29/00	26	11.5	11.9	11.2
BAREE MIDWAY	4600	4/26/00	70	29.9	46.4	29.4	MOOSE CREEK PILL	6200	5/01/00	---	8.3	17.7	14.6
BAREE TRAIL	3800	4/26/00	7	3.3	.0	1.3	MORRISSEY RIDGE CAN.	6100	5/01/00	---	20.4	--	28.7
BARKER LAKES PILL	8250	5/01/00	---	8.1	18.3	16.0	MORSE LAKE PILL	5400	5/01/00	---	49.5	90.4	44.4
BASIN CREEK PILL	7180	5/01/00	---	5.4	9.4	10.0	MOSES MTN PILL	4800	5/01/00	---	9.4	27.3	7.3
BASSOO PEAK	5150	4/27/00	7	2.8	3.6	5.7	MOSQUITO RDG PILL	5200	5/01/00	---	33.2	48.0	34.7
BEAVER CREEK TRAIL	2200	4/26/00	6	2.2	20.4	4.1	MOUNT BLUM AM	5800	4/26/00	160	77.0	--	69.1
BEAVER PASS	3680	4/26/00	51	23.3	63.0	28.1	MOUNT CRAG PILL	4050	5/01/00	---	27.8	50.0	22.4
BERNE-MILL CREEK (d)	3170	4/27/00	61	27.3	43.5	20.8	MT. KOBAY CAN.	5500	4/29/00	23	8.0	19.7	13.1
BLACK MOUNTAIN	7750	4/24/00	30	10.5	16.7	17.8	MOUNT GARDNER PILL	2860	5/01/00	---	3.0	18.1	10.8
BLACK PINE PILL	7100	5/01/00	---	2.6	11.8	12.0	N.F. ELK CR PILL	6250	5/01/00	---	3.5	9.2	9.6
BLEWETT PASS#2PILL	4270	5/01/00	0	.0	5.8	4.9	NEW HOZOMEEN LAKE	2800	4/27/00	2	.7	13.8	4.5
BLUE LAKE	5900	4/26/00	38	17.6	29.8	23.9	NEZ PERCE CMP PILL	5650	5/01/00	---	7.4	13.5	11.7
BROWN TOP AM	6000	4/26/00	129	50.6	102.2	61.7	NEZ PERCE PASS	6570	4/26/00	27	11.5	12.6	15.6
BRUSH CREEK TIMBER	5000	4/26/00	3	1.0	1.1	6.0	NOISY BASIN PILL	6040	5/01/00	---	41.8	44.4	44.0
BULL MOUNTAIN	6600	4/27/00	0	.0	.8	3.1	NORTH FORK JOCKO	6330	4/30/00	72	33.0	44.5	44.6
BUMPING LAKE (NEW)	3400	4/26/00	14	6.2	26.1	10.9	OLALLIE MDWS PILL	3960	5/01/00	---	57.1	89.4	51.0
BUMPING RIDGE PILL	4600	5/01/00	---	24.0	54.8	18.9	OLALLIE MEADOWS	3630	5/01/00	---	45.0E	60.0	43.5
BUNCHGRASS MDWPILL	5000	5/01/00	---	31.8	46.4	26.9	OPHIR PARK	7150	4/30/00	19	7.9	14.8	17.4
CAYUSE PASS	5300	5/01/00	---	95.0E	139.0	88.1	PARADISE PARK PILL	5500	5/01/00	---	84.5	107.9	61.8
CHESSMAN RESERVOIR	6200	4/28/00	0	.0	.2	2.4	PARK CK RIDGE PILL	4600	5/01/00	73	39.4	70.2	33.6
CHICKEN CREEK	4060	4/27/00	20	8.1	11.9	3.6	PETERSON MDW PILL	7200	5/01/00	---	5.6	12.8	11.3
CHIWAUKUM G.S.	2500	4/27/00	0	.0	12.7	1.0	PIGTAIL PEAK PILL	5900	5/01/00	121	52.0	76.0	47.7
COMBINATION PILL	5600	5/01/00	---	.0	.0	3.2	PIKE CREEK PILL	5930	5/01/00	---	17.6	33.2	27.8
COPPER BOTTOM PILL	5200	5/01/00	---	1.5	7.1	8.1	PIPESTONE PASS	7200	4/29/00	0	.0	7.0	5.0
COPPER MOUNTAIN	7700	4/29/00	10	3.3	9.6	10.6	POPE RIDGE PILL	3540	5/01/00	12	5.9	19.3	1.6
CORNER CREEK	3150	4/26/00	0	.0	--	--	POTATO HILL PILL	4500	5/01/00	---	26.4	43.7	17.0
CORRAL PASS PILL	6000	5/01/00	---	38.0	53.7	29.5	QUARTZ PEAK PILL	4700	5/01/00	---	17.2	24.9	18.6
COTTONWOOD CREEK	6400	4/24/00	11	3.8	8.1	7.6	ROUND TOP MTN	4020	4/27/00	0	.0	9.4	--
COUGAR MTN. PILL	3200	5/01/00	---	18.0	24.0	9.3	RAGGED RIDGE	3330	4/27/00	0	.0	.0	--
COX VALLEY	4500	4/29/00	77	33.3	74.3	39.1	RAINY PASS PILL	4780	5/01/00	---	33.3	58.7	36.8
COYOTE HILL	4200	4/28/00	0	.0	1.0	3.0	REX RIVER PILL	1900	5/01/00	57	26.1	37.9	23.1
DALY CREEK PILL	5780	5/01/00	---	.0	5.5	5.8	ROCKY PEAK PILL	8000	5/01/00	---	11.0	15.6	17.7
DEER PARK	5200	4/27/00	20	10.5	52.3	18.7	ROCKY CREEK AM	2100	4/26/00	56	25.0	--	19.1
DEVILS PARK	5900	4/26/00	86	42.2	67.6	45.0	SF THUNDER CK AM	2200	4/26/00	0	.0E	--	1.1
DISCOVERY BASIN	7050	4/27/00	13	5.2	9.4	10.0	SADDLE MTN PILL	7900	5/01/00	---	17.1	28.7	27.6
DIX HILL	6400	4/30/00	0	.0	.0	4.4	SAGE CREEK SADDLE	4080	4/27/00	19	8.3	--	--
DOCK BUTTE AM	3800	4/26/00	153	67.0	--	66.8	SALMON MDWS PILL	4500	5/01/00	---	.0	7.2	1.1
DOMMERIE FLATS	2200	4/26/00	0	.0	.0	--	SASSE RIDGE PILL	4200	5/01/00	---	29.0	54.6	24.1
EAST FORK R.S.	5400	4/26/00	0	.0	.0	.9	SAVAGE PASS PILL	6170	5/01/00	---	15.5	31.5	26.7
EASY PASS AM	5200	4/26/00	204	103.0	126.0	85.4	SAWMILL RIDGE	4700	5/01/00	78	38.0	--	28.2
ELBOW LAKE PILL	3200	5/01/00	73	36.4	65.3	27.8	SCHREIBERS MDW AM	3400	4/26/00	130	65.0	84.3	56.2
EMERY CREEK PILL	4350	5/01/00	---	7.8	8.2	8.5	SHEEP CANYON PILL	4050	5/01/00	---	44.2	79.3	34.7
FATTY CREEK	5500	4/30/00	46	19.2	21.9	23.6	SKALKAKHO PILL	7260	5/01/00	---	18.2	30.1	26.2
FISH LAKE	3370	4/26/00	53	26.4	47.3	22.4	SKITWISH RIDGE	5110	4/26/00	59	27.1	38.0	30.3
FISH LAKE PILL	3370	5/01/00	---	24.3	47.4	25.0	SKOOKUM CREEK PILL	3920	5/01/00	---	25.0	44.8	26.4
FLATTOP MTN PILL	6300	5/01/00	---	40.5	58.3	48.4	SLIDE ROCK MOUNTAIN	7100	4/26/00	21	7.5	19.8	17.2
FLEECER RIDGE	7500	4/27/00	8	3.4	10.7	8.4	SPENCER MDW PILL	3400	5/01/00	---	35.6	68.6	17.2
FOURTH OF JULY SUM	3200	5/01/00	0	.0	.0	.4	SPIRIT LAKE PILL	3100	5/01/00	---	.0	5.1	.3
FREEZEOUT CK. TRAIL	3500	4/28/00	9	2.8	14.0	7.0	SPOTTED BEAR MTN.	7000	4/26/00	19	8.0	9.6	9.6
FROHNER MDWS PILL	6480	5/01/00	---	1.0	6.8	7.1	STAHL PEAK PILL	6030	5/01/00	---	33.4	44.5	36.5
GRASS MOUNTAIN #2	2900	5/01/00	0	.0	--	2.3	STAMPEDE PASS PILL	3860	5/01/00	---	46.3	60.5	39.1
GRAVE CRK PILL	4300	5/01/00	---	6.8	9.4	9.0	STEMPLE PASS	6600	4/28/00	19	6.7	8.4	10.3
GRAYSTOKE LAKE CAN.	5500	4/28/00	39	15.2	19.3	17.0	STEVENS PASS PILL	4070	5/01/00	---	31.0	52.5	32.1
GREEN LAKE PILL	6000	5/01/00	---	20.3	40.9	19.7	STEVENS PASS SAND SD	3700	4/27/00	57	26.0	44.5	28.7
GRIFFIN CR DIVIDE	5150	4/27/00	4	1.8	3.4	6.3	STORM LAKE	7780	4/27/00	24	9.6	16.6	15.0
GROUSE CAMP PILL	5380	5/01/00	---	9.2	30.1	9.2	STRYKER BASIN	6180	4/27/00	71	32.4	38.6	35.8
HAND CREEK PILL	5030	5/01/00	---	1.6	6.3	8.3	STUART MOUNTAIN	7400	4/30/00	57	24.4	37.8	32.3
HARTS PASS PILL	6500	5/01/00	64	33.4	65.7	42.0	SUNSET PILL	5540	5/01/00	---	16.6	24.4	26.8
HELL ROARING DIVIDE	5770	4/27/00	63	29.3	30.1	30.1	SURPRISE LKS PILL	4250	5/01/00	---	54.7	82.4	36.1
HERRIG JUNCTION	4850	4/27/00	50	22.6	30.4	23.2	TEN MILE LOWER	6600	4/28/00	0	.0	2.0	5.4
HIGH RIDGE PILL	4980	5/01/00	---	6.7	16.9	12.4	TEN MILE MIDDLE	6800	4/28/00	14	4.5	8.6	12.4
HOLBROOK	4530	4/27/00	0	.0	.0	1.7	THUNDER BASIN	4200	4/28/00	53	22.4	41.4	21.8
HOODOO BASIN PILL	6050	5/01/00	---	36.4	63.0	47.2	TINKHAM CREEK PILL	3000	5/01/00	---	22.5	35.0	16.7
HUMBOLDT GLCH PILL	4250	5/01/00	---	5.9	13.4	8.9	TOUCHET #2 PILL	5530	5/01/00	---	24.1	48.6	27.3
HURRICANE	4500	4/30/00	30	12.2	53.6	21.9	TRINKUS LAKE	6100	4/26/00	84	38.9	46.0	43.1
INTERGAARD	6450	4/26/00	0	.0	5.8	7.2	TROUGH #2 PILL	5310	5/01/00	---	.0	7.7	2.5
JASPER PASS AM	5400	4/26/00	185	100.0	--	89.3	TRUMAN CREEK	4060	4/29/00	0	.0	.0	.6
JUNE LAKE PILL	3200	5/01/00	---	48.7	75.4	19.6	TUNNEL AVENUE	2450	4/27/00	21	10.3	31.4	12.7
KRAFT CREEK PILL	4750	5/01/00	---	5.9	5.3	5.8	TV MOUNTAIN	6800	4/30/00	25	11.0	19.8	18.7
LESTER CREEK	3100	5/01/00	47	20.6	--	15.0	TWELVEMILE PILL	5600	5/01/00	---	.0	10.2	12.4
LIGHTNING LAKE CAN.	3700	5/02/00	17	6.8	19.1	10.0	TWIN CAMP	4100	5/01/00	19	9.5	--	--
LOGAN CREEK	4300	4/26/00	3	.9	1.0	2.2	TWIN CREEKS	3580	4/26/00	7	3.0	2.9	1.8
LONE PINE PILL	3800	5/01/00	---	44.0	86.6	26.4	TWIN LAKES PILL	6400	5/01/00	---	31.9	51.8	39.8
LOOKOUT PILL	5140	5/01/00	---	26.0	41.6	29.3	UPPER HOLLAND LAKE	6200	4/26/00	79	35.1	37.8	35.2
LOST HORSE PILL	5000	5/01/00	---	9.2	29.5	8.2	UPPER WHEELER PILL	4400	5/01/00	---	.0	14.0	4.8
LOST LAKE PILL	6110	5/01/00	---	50.6	73.0	63.0	WARM SPRINGS PILL	7800	5/01/00	---	16.8	24.9	24.9
LOWER SANDS CREEK #2	3120	4/26/00	47	19.7	25.9	16.7	WATSON LAKES AM	4500	4/26/00	164	76.0	104.0	67.2
LUBRECHT FOREST NO 3	5450	4/29/00	0	.0	.4	3.0	WEASEL DIVIDE	5450	4/27/00	66	31.0	40.2	33.6
LUBRECHT PILL	4680	5/01/00	---	.0	.0	1.7	WELLS CREEK PILL	4200	4/01/00	---	28.5	53.7	37.8
LYMAN LAKE PILL	5900	5/01/00	---	63.6	96.9	58.7	WHITE PASS ES PILL	4500	5/01/00	---	18.4	33.0	18.7
LYNN LAKE	4000	5/01/00	48	22.2	--	10.7							
MARIAS PASS	5250	4/27/00	24	11.0	17.9	14.4							



RIVER BASIN BOUNDARIES

NRCS - Washington
2000



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Snow, Water and Climate Services

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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:

<http://www.wa.nrcs.usda.gov/nrcs/CoopSnoSrvy.htm>

Oregon:

<http://crystal.or.nrcs.usda.gov/snowsveys>

Idaho:

<http://idsnow.id.nrcs.usda.gov>

National Water and Climate Center (NWCC):

<http://www.wcc.nrcs.usda.gov>

NWCC Anonymous FTP Server:

<ftp.wcc.nrcs.usda.gov>

USDA-NRCS Agency Homepages

Washington:

<http://www.wa.nrcs.usda.gov/nrcs>

NRCS National:

<http://www.ftw.nrcs.usda.gov>



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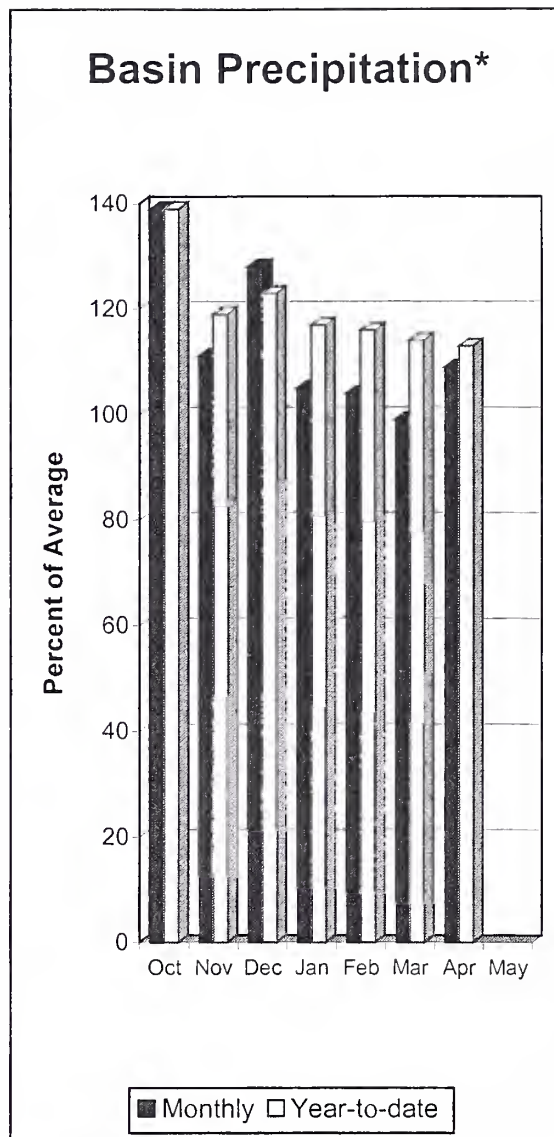
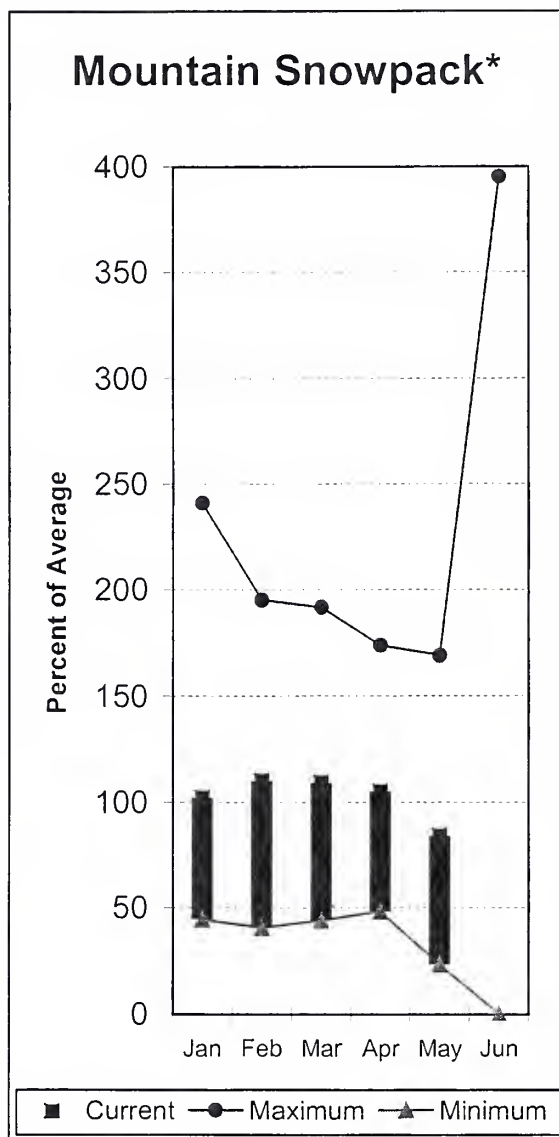
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Spokane River Basin



*Based on selected stations

The May 1 forecasts for summer runoff within the Spokane River Basin are 83% of average near Post Falls and 86% at Long Lake. The forecast is based on a basin snowpack that is 84% of average and precipitation that is 109% of average for the water year. Precipitation for April was near normal at 113% of average. Streamflow on the Spokane River at Long Lake, was 157% of average for April. May 1 storage in Coeur d'Alene Lake, was 334,500-acre feet, 136% of average and 140% of capacity. Snowpack at Quartz Peak SNOTEL site contained 17.2 inches of water, compared to the average May 1 reading of 18.6 inches. Average temperatures in the Spokane basin were 2-3 degrees above normal.

For more information contact your local Natural Resources Conservation Service office.

Spokane River Basin

Streamflow Forecasts - May 1, 2000

<----- Drier ----- Future Conditions ----- Wetter ----->

Forecast Point	Forecast Period	90% 70%		50% (Most Probable)		30% 10%		30-Yr Avg.
		(1000AF)	(1000AF)	(1000AF)	(% AVG.)	(1000AF)	(1000AF)	(1000AF)
SPOKANE near Pcst Falls (2)	MAY-SEP	1112	1355	1520	83	1685	1928	1840
	MAY-JUL	1048	1281	1440	83	1599	1832	1746
SPOKANE at Long Lake	MAY-JUL	1227	1494	1675	85	1856	2123	1972
	MAY-SEP	1408	1689	1880	86	2071	2352	2195

SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of April					SPOKANE RIVER BASIN Watershed Snowpack Analysis - May 1, 2000			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
COEUR D'ALENE	238.5	334.5	284.5	246.7	SPOKANE RIVER	10	64	84
					NEWMAN LAKE	1	69	92

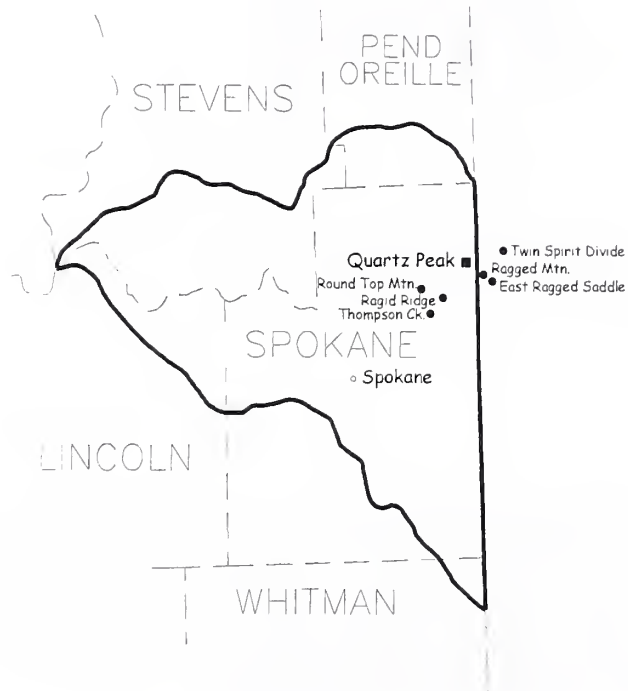
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

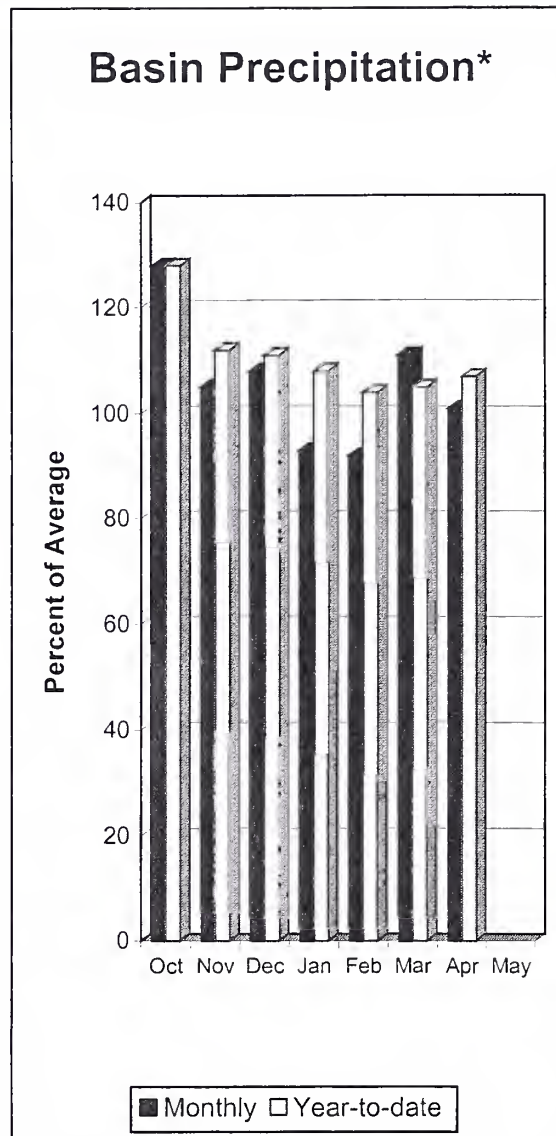
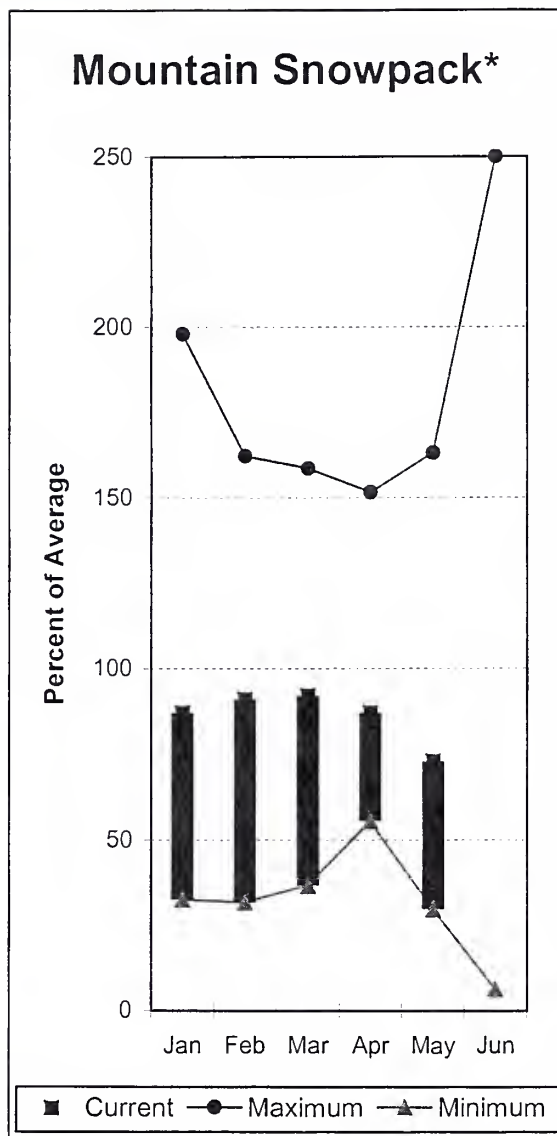
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

SPOKANE RIVER BASIN Percent of Average May 1, 2000

Snowpack - 84%
 Precipitation - 113%
 Reservoir - 136%



Colville - Pend Oreille River Basins



*Based on selected stations

The May – September average forecast for the Kettle River streamflow is 105%, Colville at Kettle Falls is 128%, Chamokane Creek near Long Lake is 136% and Priest River near the town of Priest River is 102%. April streamflow was 128% of average on the Pend Oreille River, 127% on the Columbia at the International Boundary and 181% on the Kettle River. May 1 snow cover was 73% of average in the Pend Oreille Basin and 97% in the Kettle River Basin. Precipitation during April was 101% of average, bringing the year-to-date precipitation to 107% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 146% of average and 43% of capacity on May 1. Average temperatures were 2 degrees above normal.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - May 1, 2000

<----- Drier ----- Future Conditions ----- Wetter ----->

Forecast Point	Forecast Period	90% (1000AF)		70% (1000AF)		Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)		10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (1,2)	MAY-JUL	7235	8579	9190	83	9801	11145	11070			
	MAY-SEP	8030	9522	10200	83	10878	12370	12290			
PRIEST near Priest River (1,2)	MAY-JUL	526	603	638	102	673	750	626			
	MAY-SEP	558	650	692	102	734	826	679			
PEND OREILLE bl Box Canyon (1,2)	MAY-JUL	6880	8554	9315	83	10076	11750	11220			
	MAY-SEP	7625	9478	10320	83	11162	13015	12430			
CHAMOKANE CREEK near Long Lake	MAY-AUG	7.94	10.12	11.59	136	13.06	15.24	8.52			
	JUL-AUG	3.35	3.60	3.76	121	3.92	4.17	3.12			
COLVILLE at Kettle Falls	MAY-SEP	82	97	108	128	118	134	84			
	MAY-JUL	72	85	94	129	103	116	73			
KETTLE near Laurier	MAY-SEP	1389	1549	1657	105	1765	1925	1582			
	MAY-JUL	1325	1462	1555	104	1648	1785	1489			
COLUMBIA at Birchbank (1,2)	MAY-JUL	30232	32479	33500	104	34521	36768	32090			
	MAY-SEP	38636	41499	42800	105	44101	46964	40760			
COLUMBIA at Grand Coulee Dm (1,2)	MAY-SEP	52323	56502	58400	101	60298	64477	57921			
	MAY-JUL	42713	46142	47700	100	49258	52687	47614			

COLVILLE - PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
ROOSEVELT	5232.0	1878.6	591.3	1310.0
BANKS	715.0	675.1	689.8	435.0

COLVILLE - PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - May 1, 2000

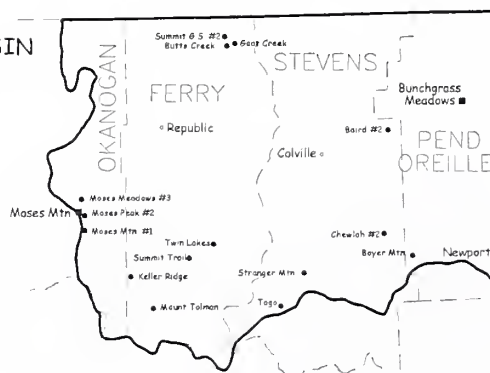
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
COLVILLE RIVER	0	0	0
PEND OREILLE RIVER	87	64	72
KETTLE RIVER	6	81	97

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

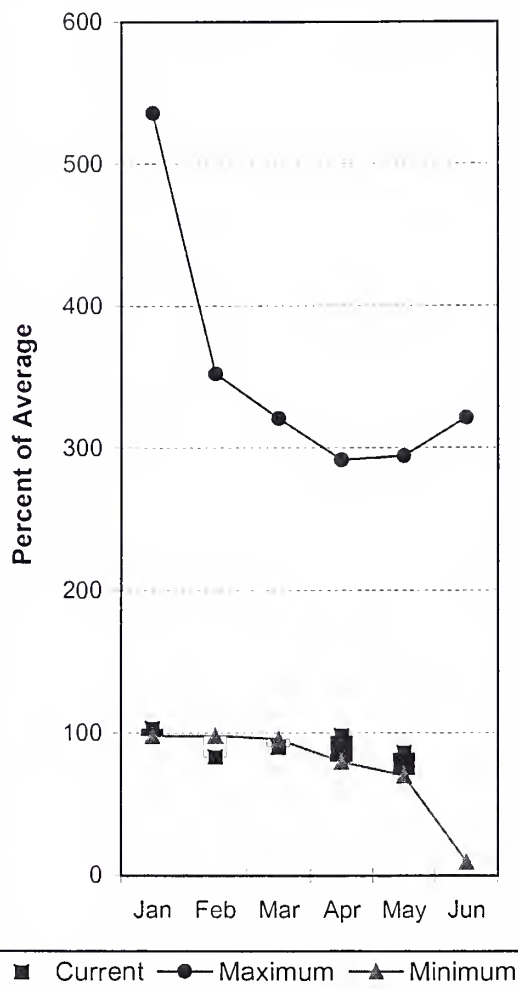
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

COLVILLE-PEND OREILLE BASIN
 Percent of Average
 May 1, 2000
 Snowpack - 73%
 Precipitation - 107%
 Reservoir - 146%

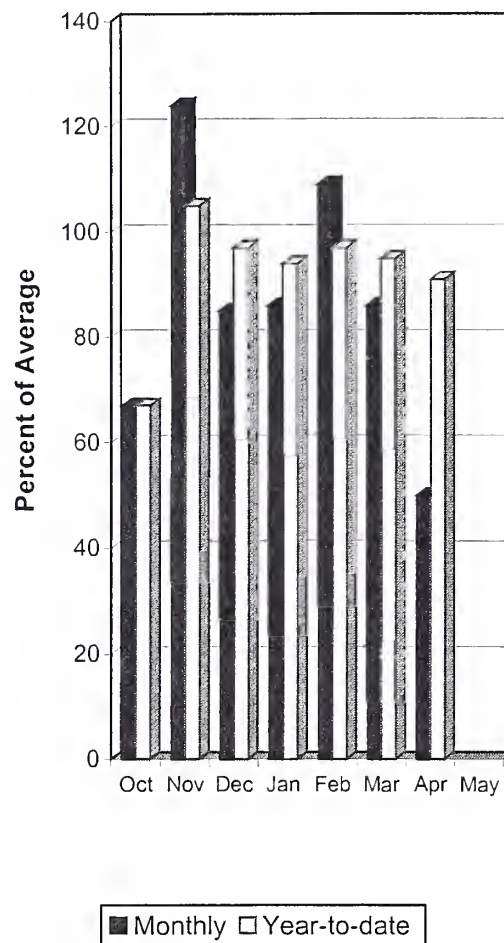


Okanogan - Methow River Basins

Mountain Snowpack*



Basin Precipitation*



*Based on selected stations

Average summer runoff forecast for the Okanogan River is 86%, Similkameen River is 80%, Methow River is 93% and Salmon Creek is 87%. May 1 snow cover on the Okanogan was 82% of average and the Methow was 83%. Moses Mountain SNOTEL site had a May 1 reading of 129% of average. April precipitation in the Okanogan-Methow was 50% of average, with precipitation for the water year at 91% of average. April streamflow for the Methow River was 178% of average, 153% for the Okanogan River and 185% for the Similkameen. Snow-water-content at the Salmon Meadows SNOTEL, near Conconully, had melted out. Average for this site is 1.1 inches on May 1. Combined storage in the Conconully Reservoirs was 20,600-acre feet, which is 88% of capacity and 129% of the May 1 average. Temperatures were 3 degrees above normal for the past month.

For more information contact your local Natural Resources Conservation Service office.

Okanogan - Methow River Basins

Streamflow Forecasts - May 1, 2000

		<----- Drier ----- Future Conditions ----- Wetter ----->						
Forecast Point	Forecast Period	Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
=====		=====		=====		=====		
SIMILKAMEEN near Nighthawk (1)	MAY-JUL	675	868	955	79	1042	1235	1205
	MAY-SEP	753	950	1040	80	1130	1327	1300
OKANOGAN near Tonasket (1)	MAY-JUL	641	977	1130	85	1283	1619	1328
	MAY-SEP	738	1104	1270	86	1436	1802	1484
SALMON CREEK near Conconully	MAY-JUL	5.7	11.7	15.7	87	19.7	26	18.0
	MAY-SEP	5.9	12.1	16.4	87	21	27	18.9
METHOW RIVER near Pateros	MAY-SEP	688	752	795	93	838	902	854
	MAY-JUL	662	719	757	96	795	852	786

OKANOGAN - METHOW RIVER BASINS Reservoir Storage (1000 AF) - End of April					OKANOGAN - METHOW RIVER BASINS Watershed Snowpack Analysis - May 1, 2000			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
SALMON LAKE	10.5	7.5	7.4	8.0	OKANOGAN RIVER	19	59	82
CONCONULLY RESERVOIR	13.0	13.1	13.1	8.0	OMAK CREEK	1	34	129
					SANPOIL RIVER	0	0	0
					SIMILKAMEEN RIVER	4	33	40
					TOATS COULEE CREEK	0	0	0
					CONCONULLY LAKE	1	0	0
					METHOW RIVER	3	51	83

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

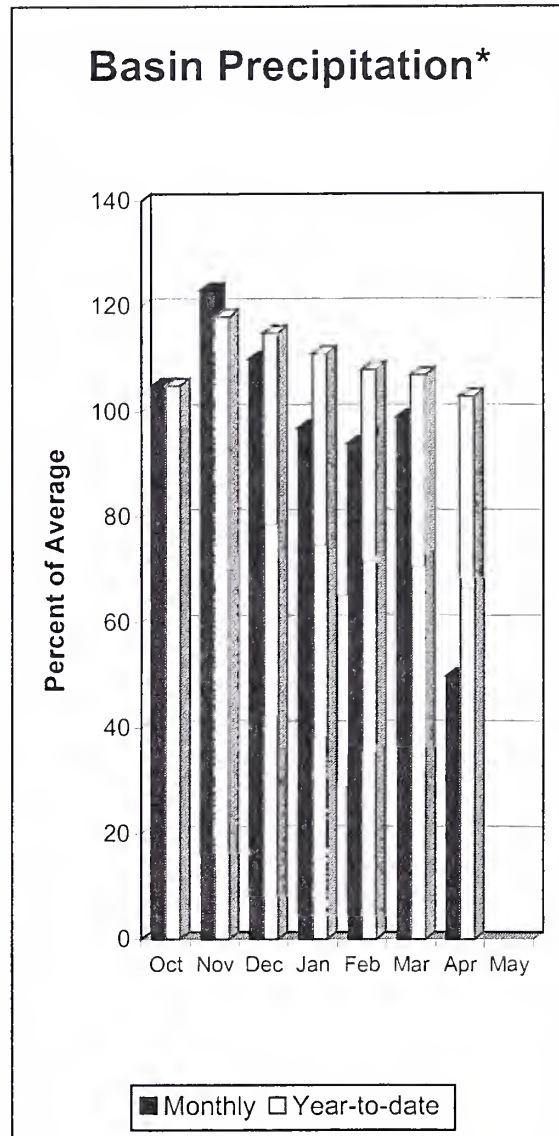
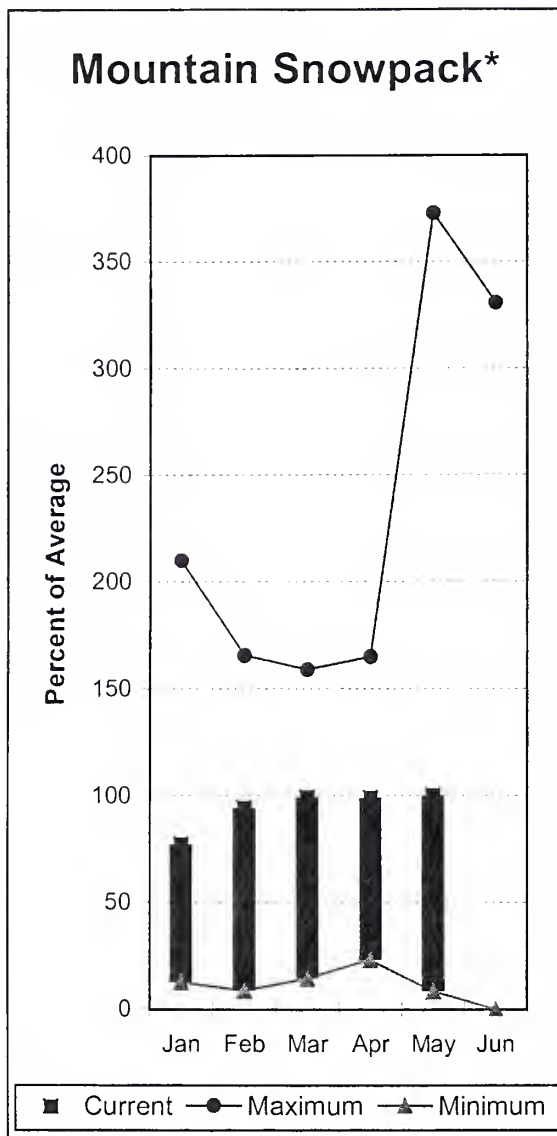
(2) - The value is natural flow - actual flow may be affected by upstream water management.

OKANOGAN-METHOW BASIN Percent of Average May 1, 2000

Snowpack - 86%
Precipitation - 91%
Reservoir - 129%



Wenatchee - Chelan River Basins



*Based on selected stations

Precipitation during April was 50% of average in the basin and 103% for the year-to-date. All rivers and streams within the Wenatchee – Chelan river basin are forecast to have near to slightly above average flows for the upcoming May – September runoff period. April average streamflows on the Chelan River were 150% and on the Wenatchee River 138%. May 1 average snowpack in Wenatchee Basin was 97%, in Chelan Basin was 103%; Colockum Ridge and Stemilt Creek snow survey sites have melted out for the season. Snowpack in the Entiat River Basin was 369% of average. Reservoir storage in Lake Chelan was 329,500-acre feet, 73% of May 1 average and 49% of capacity. Lyman Lake SNOTEL had the most snow water with 63.6 inches of water. This site would normally have 58.7 inches on May 1. Temperatures were 2-3 degrees above normal for April.

For more information contact your local Natural Resources Conservation Service office.

Wenatchee - Chelan River Basins

Streamflow Forecasts - May 1, 2000

Forecast Point	Forecast Period	<----- Drier ----- Future Conditions ----- Wetter ----->						
		=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
CHELAN RIVER near Chelan	MAY-SEP	909	975	1020	98	1065	1131	1041
	MAY-JUL	802	863	905	100	947	1008	905
STEHEKIN near STEHEKIN	MAY-SEP	638	684	716	95	748	794	751
	MAY-JUL	520	566	597	96	628	674	625
ENTIAT RIVER near Ardenvoir	MAY-SEP	217	230	239	115	248	261	208
	MAY-JUL	194	207	216	115	225	238	188
WENATCHEE at Plain	MAY-SEP	935	1009	1060	102	1111	1185	1042
	MAY-JUL	848	906	945	102	984	1042	925
WENATCHEE R. at Peshastin	MAY-SEP	882	1173	1370	96	1567	1858	1428
	MAY-JUL	830	1089	1265	99	1441	1700	1277
STEMILT nr Wenatchee (miners in)	MAY-SEP	99	126	144	104	162	189	138
ICICLE CREEK near Leavenworth	MAY-SEP	313	323	330	108	337	347	305
	MAY-JUL	276	290	300	108	310	324	279
COLUMBIA R. bl Rock Island Dam (2)	MAY-SEP	56597	60826	63700	101	66574	70803	62987
	MAY-JUL	46621	50121	52500	101	54879	58379	52239

WENATCHEE - CHELAN RIVER BASINS Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
CHELAN LAKE	676.1	329.5	172.6	448.8

WENATCHEE - CHELAN RIVER BASINS Watershed Snowpack Analysis - May 1, 2000

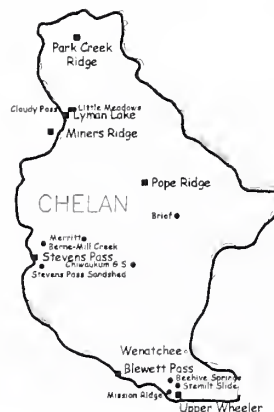
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
CHELAN LAKE BASIN	4	63	103
ENTIAT RIVER	1	31	369
WENATCHEE RIVER	11	52	97
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	1	0	0
COLOCKUM CREEK	1	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

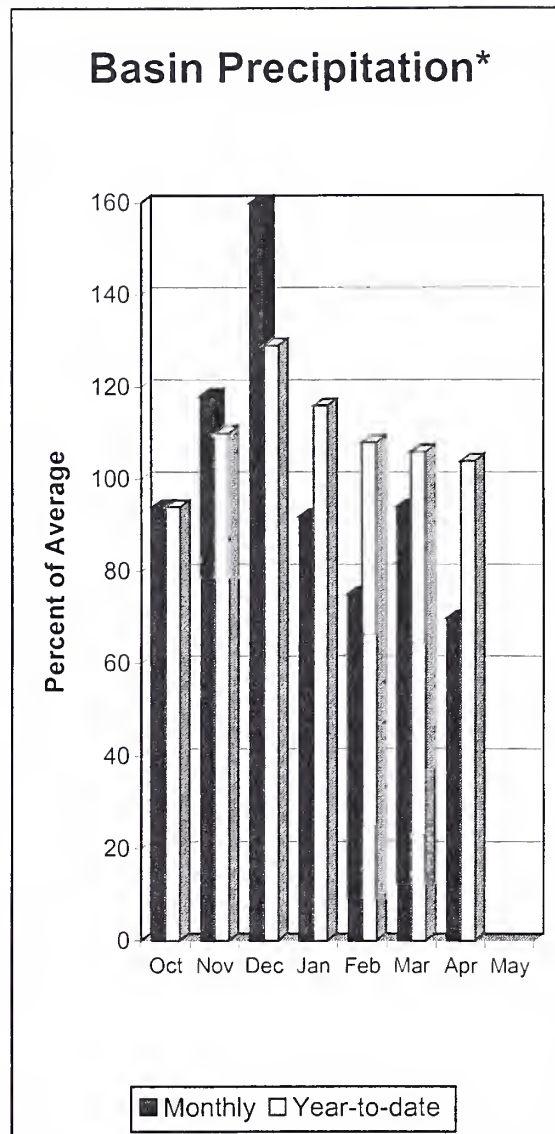
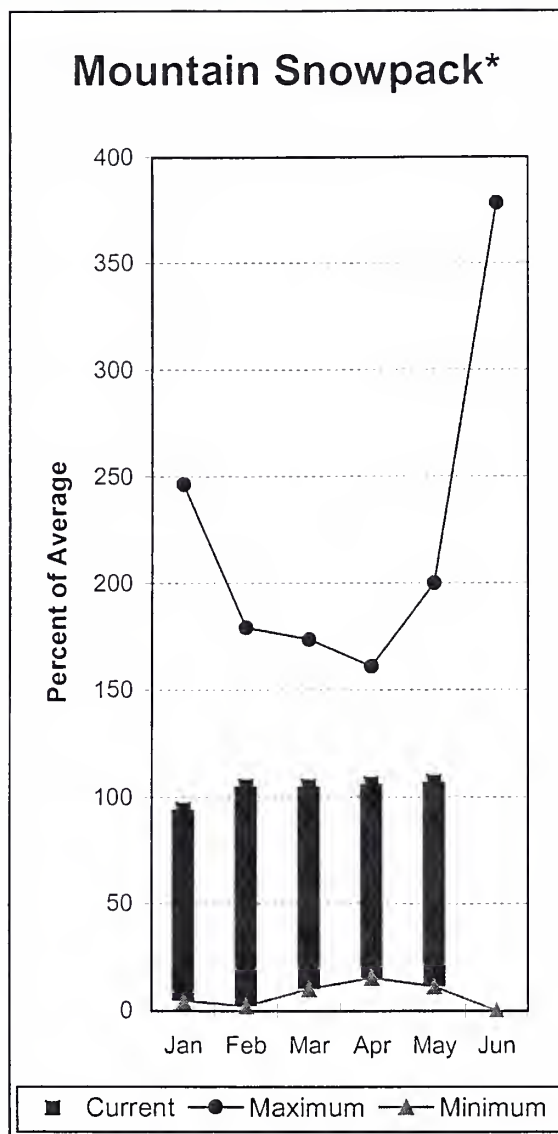
The average is computed for the 1961-1990 base period.

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 (2) - The value is natural flow - actual flow may be affected by upstream water management.

WENATCHEE-CHELAN BASIN
Percent of Average
May 1, 2000
Snowpack - 100%
Precipitation - 107%
Reservoir - 73%



Upper Yakima River Basin



*Based on selected stations

May 1 reservoir storage for the Upper Yakima reservoirs was 686,600-acre feet, 110% of average. Forecasts for the Yakima River at Cle Elum are 93% of average. Lake inflow forecasts include Keechelus at 96%, Kachess at 91% and Lake Cle Elum at 93% of average. A new forecast, developed for the Teanaway River near Cle Elum, is for 95% average flows. April streamflows within the basin were Yakima near Cle Elum at 157% and Cle Elum River near Roslyn at 143%. May 1 snowpack was 107% based upon nine snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 70% of average for April and 104% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Upper Yakima River Basin

Streamflow Forecasts - May 1, 2000

Forecast Point	Forecast Period	<<===== Drier =====>>		Future Conditions		>>===== Wetter =====<<		30-Yr Avg. (1000AF)
		=====		Chance Of Exceeding *		=====		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
KEECHELUS LAKE INFLOW	MAY-JUL	77	87	94	98	101	111	96
	MAY-SEP	82	95	103	96	111	124	107
KACHESS LAKE INFLOW	MAY-JUL	69	75	80	93	85	92	86
	MAY-SEP	70	79	84	91	90	98	92
CLE ELUM LAKE INFLOW	MAY-JUL	289	307	320	94	333	351	339
	MAY-SEP	312	335	350	93	365	388	378
YAKIMA at Cle Elum	MAY-JUL	549	590	618	94	646	687	657
	MAY-SEP	603	655	690	93	725	777	740
TEANAWAY near Cle Elum	MAY-JUL	72	81	87	95	93	102	91
	MAY-SEP	77	86	93	95	99	108	97

UPPER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
KEECHELUS	157.8	106.7	81.0	119.0
KACHESS	239.0	223.8	183.5	197.0
CLE ELUM	436.9	356.1	255.3	308.0

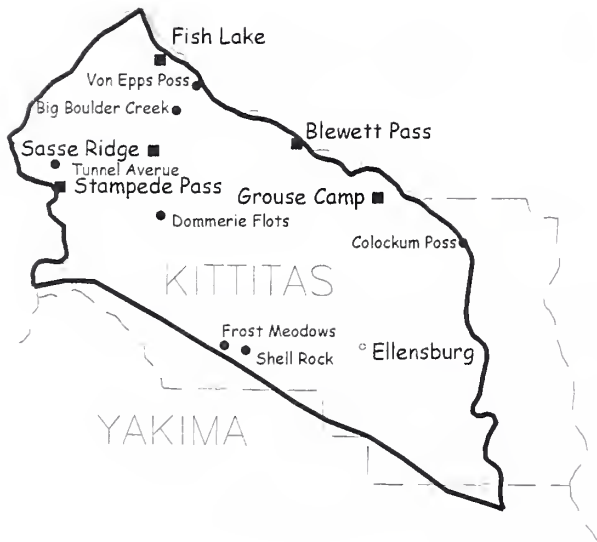
UPPER YAKIMA RIVER BASIN Watershed Snowpack Analysis - May 1, 2000

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
UPPER YAKIMA RIVER	9	58	107

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

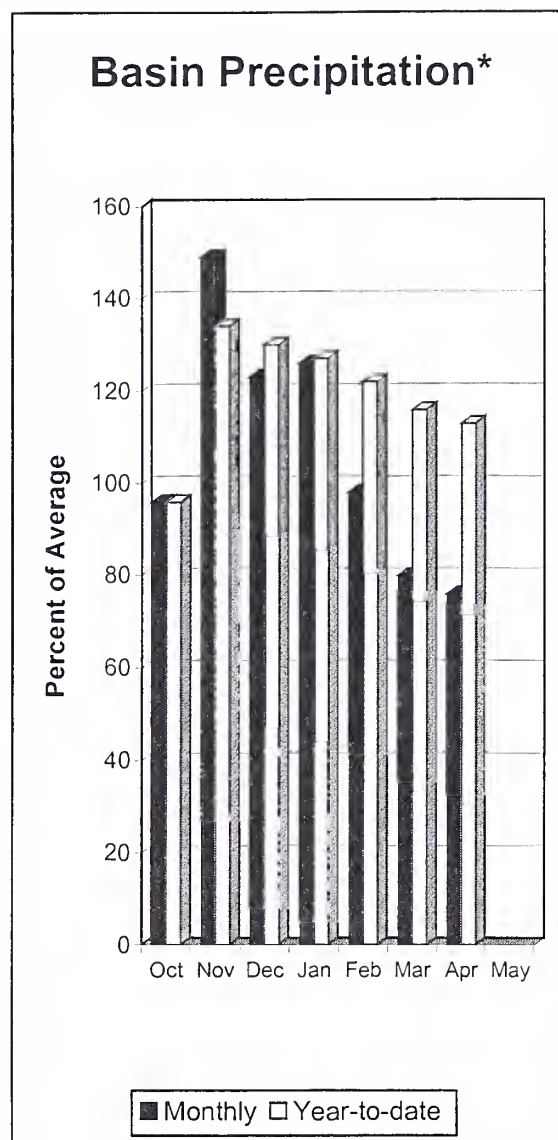
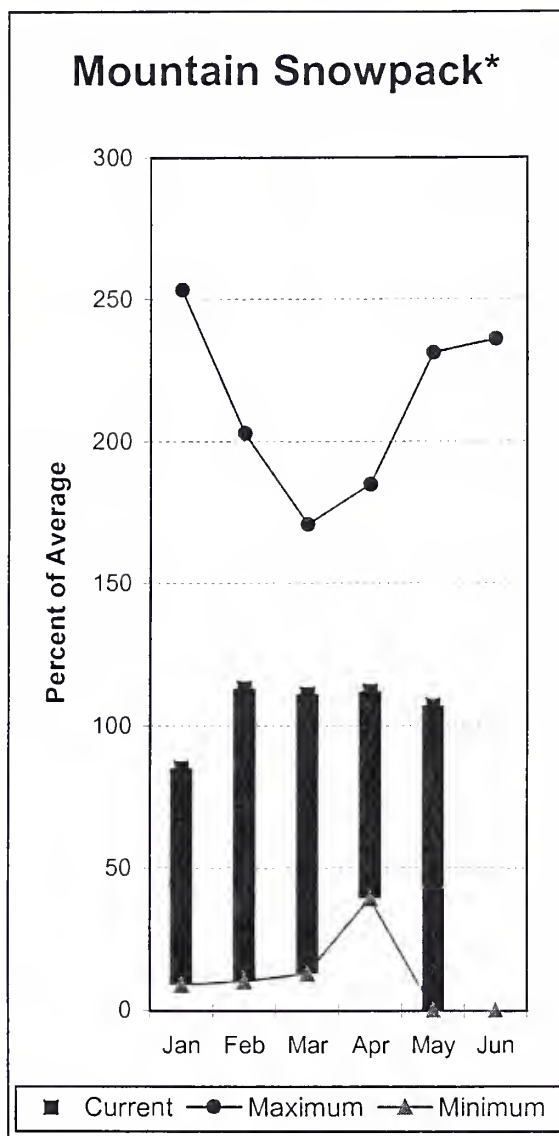
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.



UPPER YAKIMA BASIN Percent of Average May 1, 2000

Snowpack - 107%
 Precipitation - 104%
 Reservoir - 110%

Lower Yakima River Basin



*Based on selected stations

April average streamflows within the basin were: Yakima River near Parker, 163%; Naches River near Naches, 166%; and Yakima River at Kiona, 151%. May 1 reservoir storage for Bumping and Rimrock reservoirs was 217,800-acre feet, 137% of average. Forecast averages for Yakima River near Parker are 93%; American River near Nile, 93%; Ahtanum Creek, 95%; and Klickitat River near Glenwood, 115%. May 1 snowpack was 109% based upon seven snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 76% of average for April and 113% year-to-date for water. Average temperatures for the month were 2-3 degrees above normal. Volume forecasts for Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Lower Yakima River Basin

Streamflow Forecasts - May 1, 2000

Forecast Point	Forecast Period	<----- Drier ----- Future Conditions ----- Wetter ----->						
		Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
BUMPING LAKE INFLOW	MAY-SEP	92	103	110	94	117	128	117
	MAY-JUL	87	95	101	95	107	115	106
AMERICAN RIVER near Nile	MAY-SEP	80	89	95	93	101	110	102
	MAY-JUL	73	81	86	94	92	100	92
RIMROCK LAKE INFLOW	MAY-SEP	169	184	195	96	206	221	204
	MAY-JUL	145	156	164	98	172	183	167
NACHES near Naches	MAY-SEP	551	604	640	93	676	729	686
	MAY-JUL	512	555	585	96	615	658	609
AHTANUM CREEK nr Tampico (2)	MAY-SEP	28	33	36	95	39	45	38
	MAY-JUL	25	29	33	96	36	40	34
YAKIMA near Parker	MAY-SEP	1297	1400	1470	93	1540	1643	1580
	MAY-JUL	1165	1257	1320	95	1383	1475	1390
KLICKITAT near Glenwood	MAY-JUN	86	95	100	115	106	115	87
	MAY-SEP	116	127	135	115	143	154	117

LOWER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
BUMPING LAKE	33.7	30.4	10.3	15.0
RIMROCK	198.0	187.4	129.8	144.0

LOWER YAKIMA RIVER BASIN Watershed Snowpack Analysis - May 1, 2000

Watershed	Number of Data Sites	This Year as % of Last Yr Average	
		Last Yr	Average
BUMPING LAKE	33.7	30.4	15.0
RIMROCK	198.0	187.4	144.0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

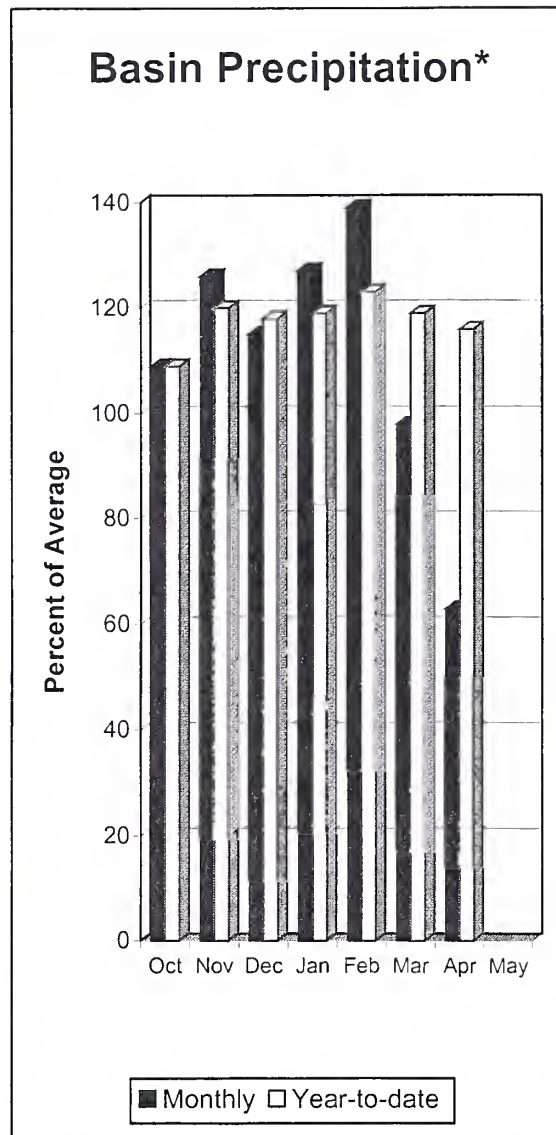
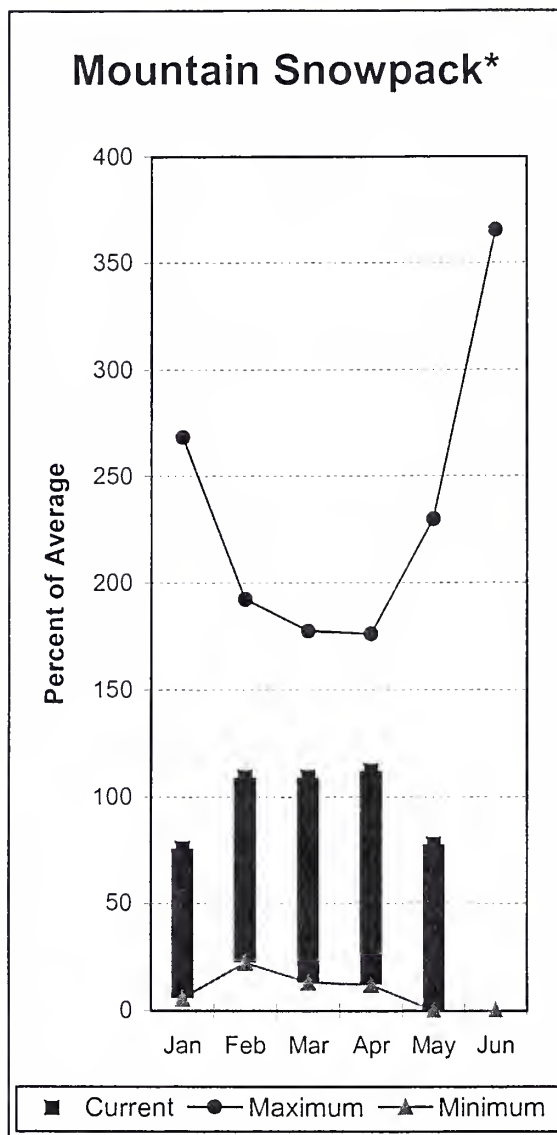
(2) - The value is natural flow - actual flow may be affected by upstream water management.



LOWER YAKIMA BASIN Percent of Average May 1, 2000

Snowpack - 107%
Precipitation - 113%
Reservoir - 137%

Walla Walla River Basin



*Based on selected stations

April precipitation was 63% of average, bringing the year-to-date precipitation to 116% of average. May 1 average snowpack was at 78%. The forecast for the coming summer is for 97% of average streamflow in the South Fork Walla Walla River and 104% for Mill Creek. April streamflow was 168% of average for the Walla Walla River. The Touchet SNOTEL site had 24.1 inches of snow-water-equivalent. The average May 1 reading for this site is 27.3 inches. Average temperatures were 4 degrees above normal for the area.

For more information contact your local Natural Resources Conservation Service office.

Walla Walla River Basin

Streamflow Forecasts - May 1, 2000

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	Chance Of Exceeding *					30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)		10% (1000AF)
		=====						
MILL CREEK at Walla Walla	MAY-SEP	4.62	6.51	7.80	104	9.09	10.98	7.50
	MAY-JUL	4.33	6.22	7.50	103	8.78	10.67	7.30
SF WALLA WALLA near Milton-Freewater	MAY-JUL	31	35	38	101	40	44	37
	MAY-SEP	41	46	49	97	52	57	50

WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - May 1, 2000

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
WALLA WALLA RIVER	2	47	78

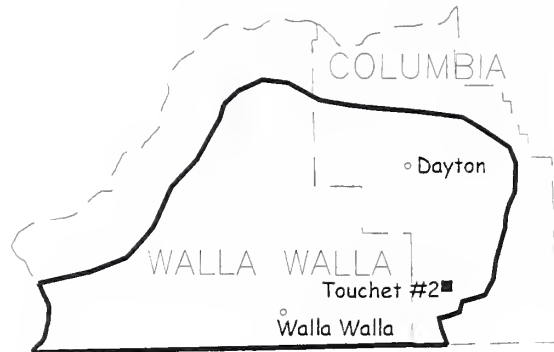
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

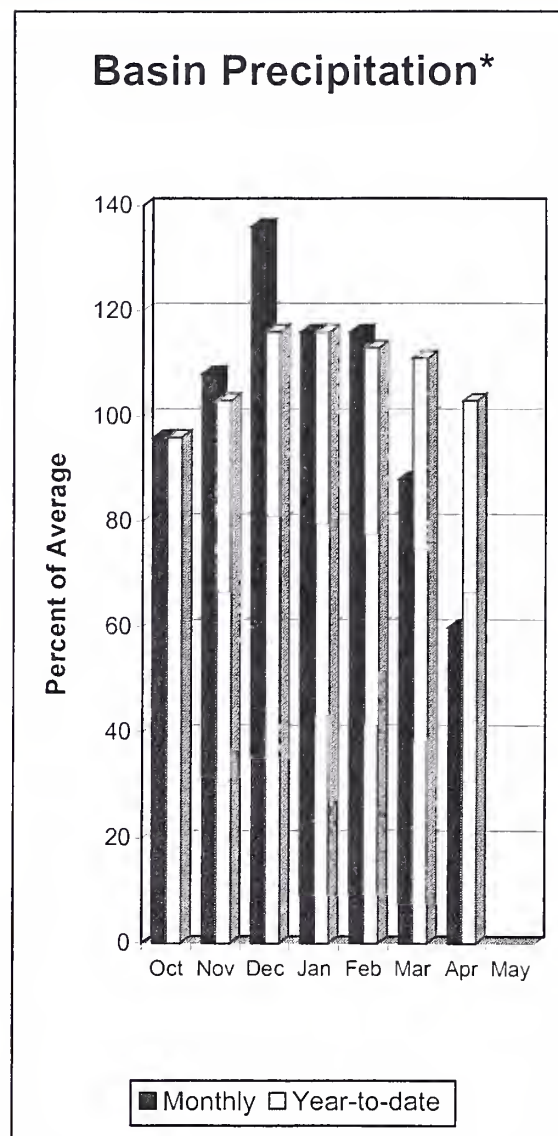
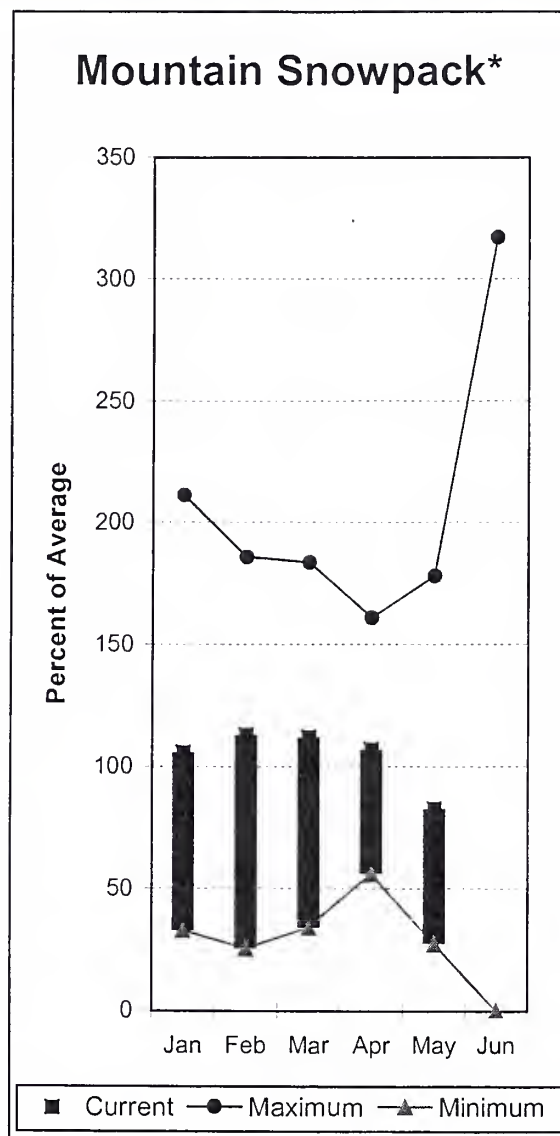
WALLA WALLA BASIN
Percent of Average
May 1, 2000

Snowpack - 78%
Precipitation - 116%



High Ridge ■

Lower Snake River Basin



*Based on selected stations

The May - September forecast is for 80% of average streamflow in the Snake River below Lower Granite Dam, 91% for Grande Ronde at Troy, and 87% for Clearwater River at Spalding. April precipitation was 60% of average, maintaining the year-to-date precipitation at 103% of average. May 1 snowpack was at 83% of average. April streamflow was 117% of average for Snake River below Lower Granite Dam and 133% for Grande Ronde River near Troy. Average temperatures were 4 degrees above normal in the area for the month.

For more information contact your local Natural Resources Conservation Service office.

Lower Snake River Basin

Streamflow Forecasts - May 1, 2000

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
GRANDE RONDE at Troy (1)	MAY-JUL	551	719	795	91	871	1039	872
	MAY-SEP	613	800	885	91	970	1157	970
=====								
CLEARWATER at Spalding (1,2)	MAY-JUL	4155	4901	5240	88	5579	6325	5972
	MAY-SEP	4409	5208	5570	87	5932	6731	6405
=====								
SNAKE blw Lower Granite Dam (1,2)	MAY-JUL	10210	12472	13500	80	14528	16790	16940
	MAY-SEP	11995	14612	15800	80	16988	19605	19650

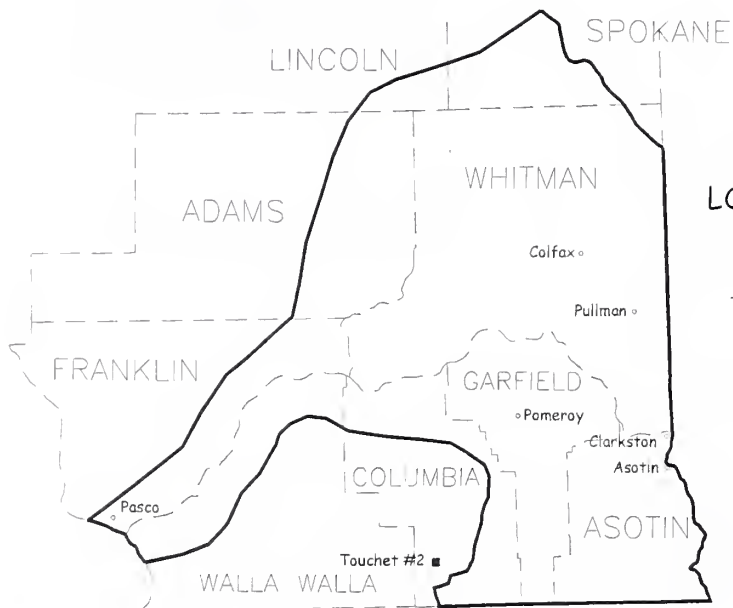
LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of April					LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - May 1, 2000			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					LOWER SNAKE, GRANDE RONDE	12	61	83

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.



LOWER SNAKE RIVER BASIN

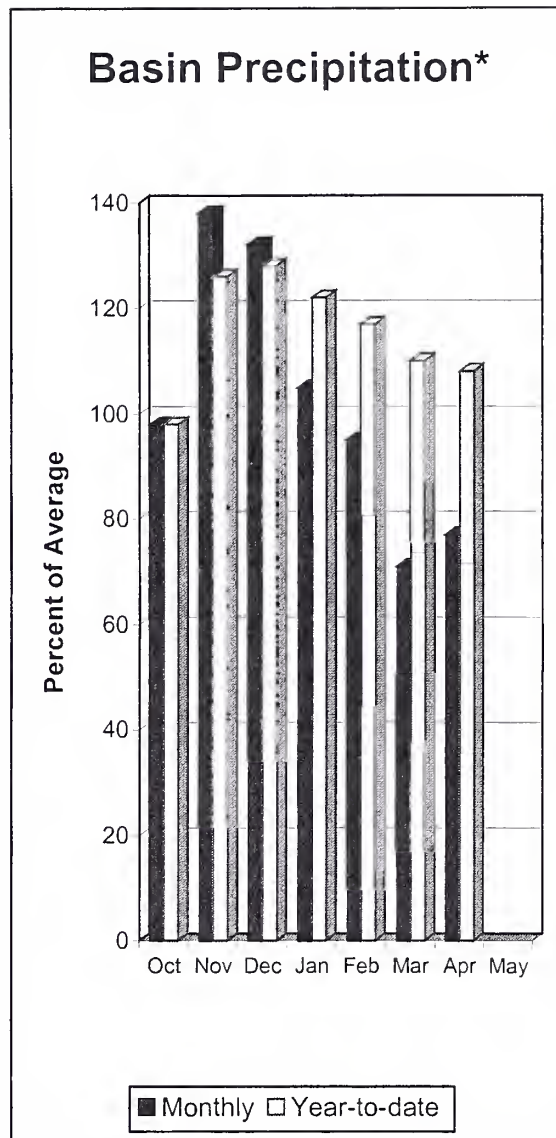
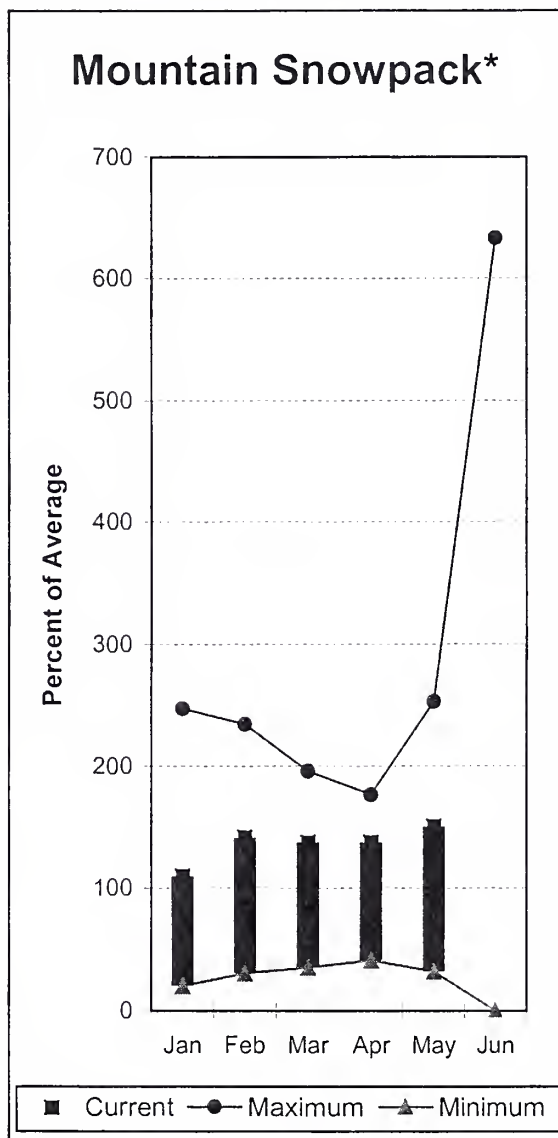
Percent of Average

May 1, 2000

Snowpack - 83%

Precipitation - 103%

Cowlitz - Lewis River Basins



*Based on selected stations

The May - September forecast is for 110% of average streamflow in the Lewis River at Ariel, 97% for Cowlitz below Mayfield Dam, and 115% for Klickitat River near Glenwood. April average streamflow for Cowlitz River was 114% and 92% for Lewis River. April precipitation was 77% of average and the water-year average was 108%. May 1 snow cover for Cowlitz River was 119%, and Lewis River was 184% of average. The Paradise Park SNOTEL recorded the most water content for the basin with 84.5 inches of water. Average May 1 water content is 61.8 inches. Average temperatures were 2-3 degrees above normal during April.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - May 1, 2000

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>		Chance Of Exceeding *				30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
LEWIS at Ariel (2)	MAY-JUL	656	730	780	112	830	904	697
	MAY-SEP	808	884	935	110	986	1062	850
COWLITZ R. bl Mayfield Dam (2)	MAY-SEP	700	1164	1480	97	1796	2260	1531
	MAY-JUL	614	1004	1270	98	1536	1926	1292
COWLITZ R. at Castle Rock (2)	MAY-SEP	893	1487	1890	94	2293	2887	2021
	MAY-JUL	770	1264	1600	95	1936	2430	1679
Klickitat near Glenwood	MAY-JUN	86	95	100	115	106	115	87
	MAY-SEP	116	127	135	115	143	154	117
COLUMBIA R. at The Dalles (2)	MAY-SEP	69644	76465	81100	95	85735	92556	85635
	MAY-JUL	57544	63234	67100	94	70966	76656	71413

COWLITZ - LEWIS RIVER BASINS					COWLITZ - LEWIS RIVER BASINS			
Reservoir Storage (1000 AF) - End of April					Watershed Snowpack Analysis - May 1, 2000			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					LEWIS RIVER	4	58	184
					COWLITZ RIVER	7	66	119

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

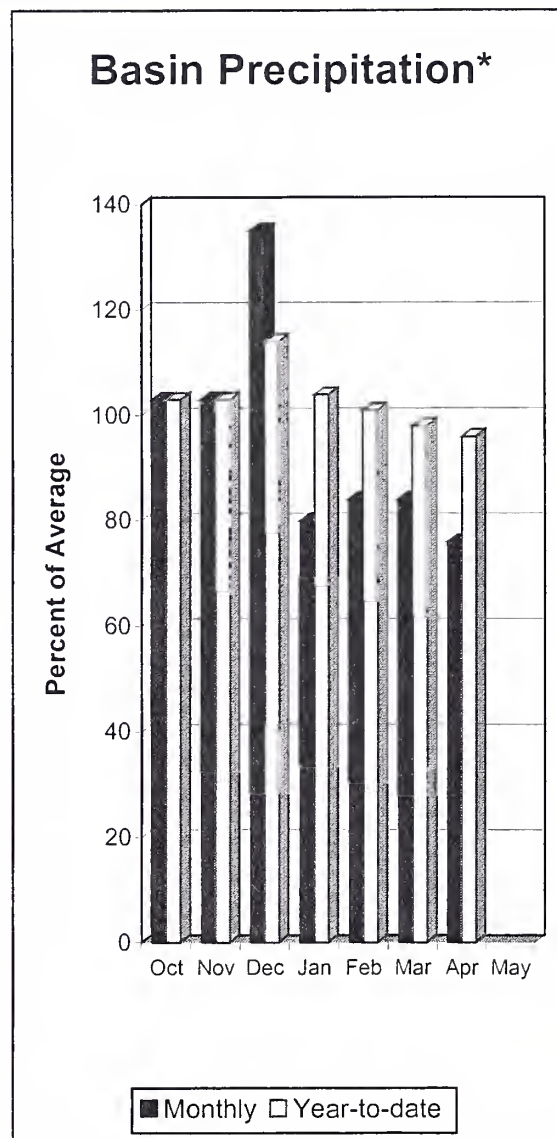
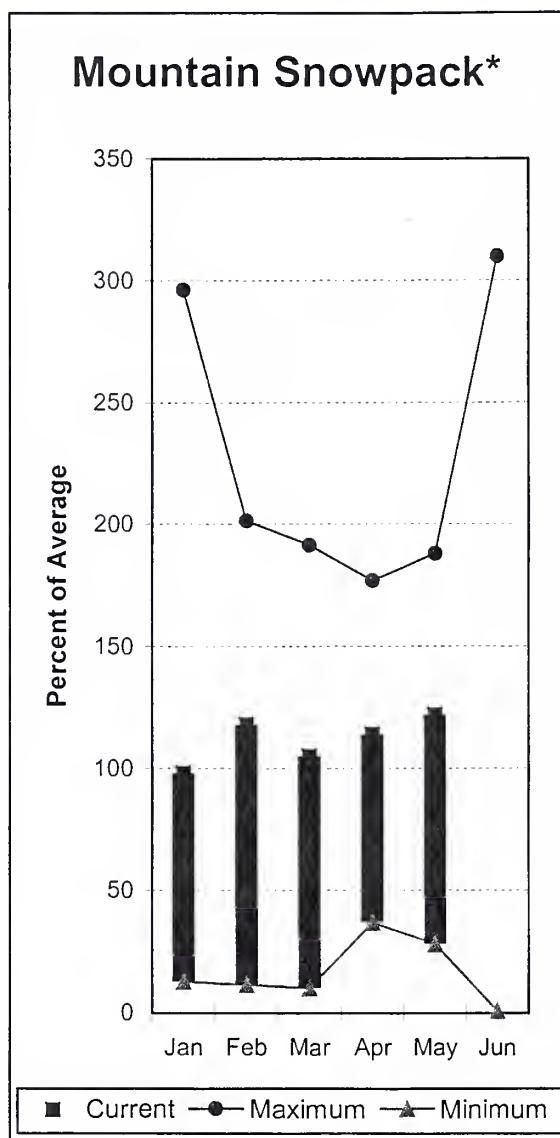
(2) - The value is natural flow - actual flow may be affected by upstream water management.



COWLITZ-LEWIS BASIN
Percent of Average
May 1, 2000

Snowpack - 151%
Precipitation - 108%

White - Green – Puyallup River Basins



*Based on selected stations

Summer runoff is forecast to be 102% of average for the Green River below Howard Hanson Dam and 98% for the White River near Buckley. May 1 snowpack was 113% of average in both White River and Puyallup river basins and 139% in Green River Basin. Water content on May 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 38 inches. This site has a May 1 average of 29.5 inches. April precipitation was 76% of average, dropping the water year-to-date to 96% of average for the basins. Average temperatures in the area were slightly above normal for the month.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - May 1, 2000

		<----- Drier ----- Future Conditions ----- Wetter ----->						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
WHITE near Buckley (1,2)		268	322	347	98	372	426	354
MAY-SEP		354	413	440	98	467	526	449
GREEN below Howard Hanson (1,2)		138	162	173	102	184	208	170
MAY-SEP		159	189	202	102	215	245	198

WHITE - GREEN - PUYALLUP RIVER BASINS Reservoir Storage (1000 AF) - End of April

WHITE - GREEN - PUYALLUP RIVER BASINS Watershed Snowpack Analysis - May 1, 2000

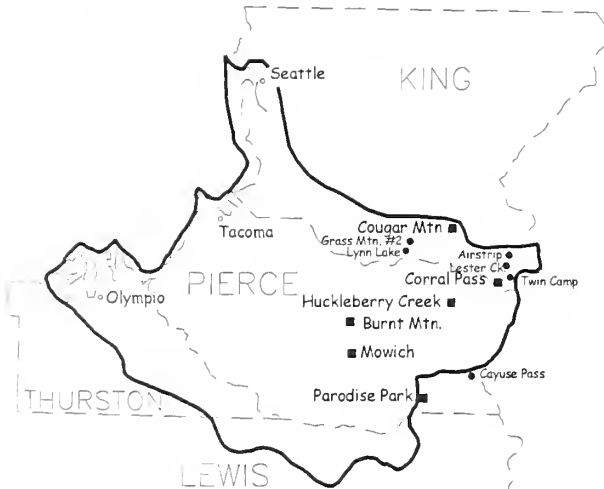
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WHITE RIVER	3	64	113
					GREEN RIVER	6	76	139
					PUYALLUP RIVER	3	64	113

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.



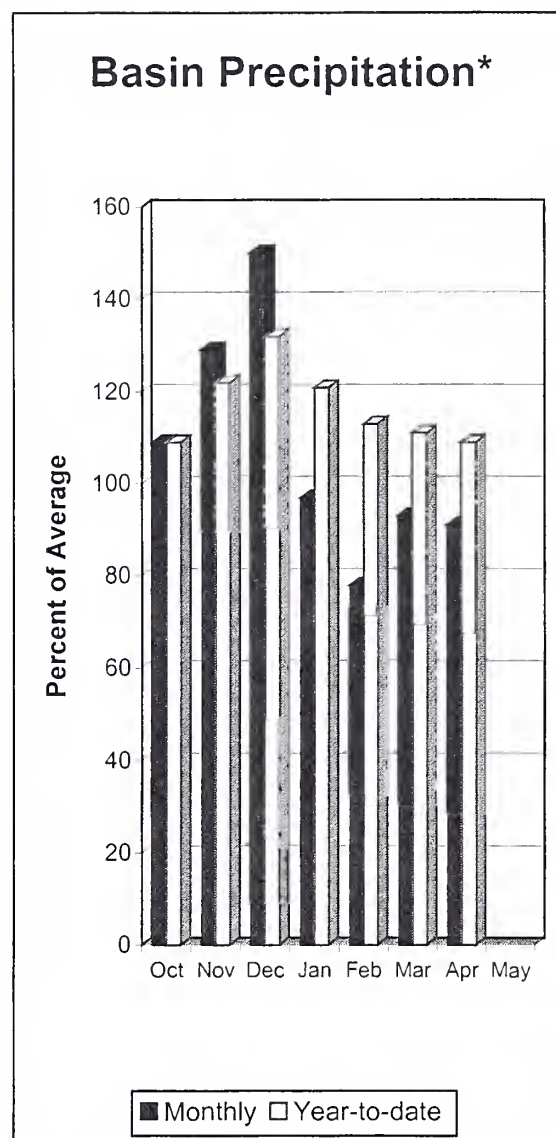
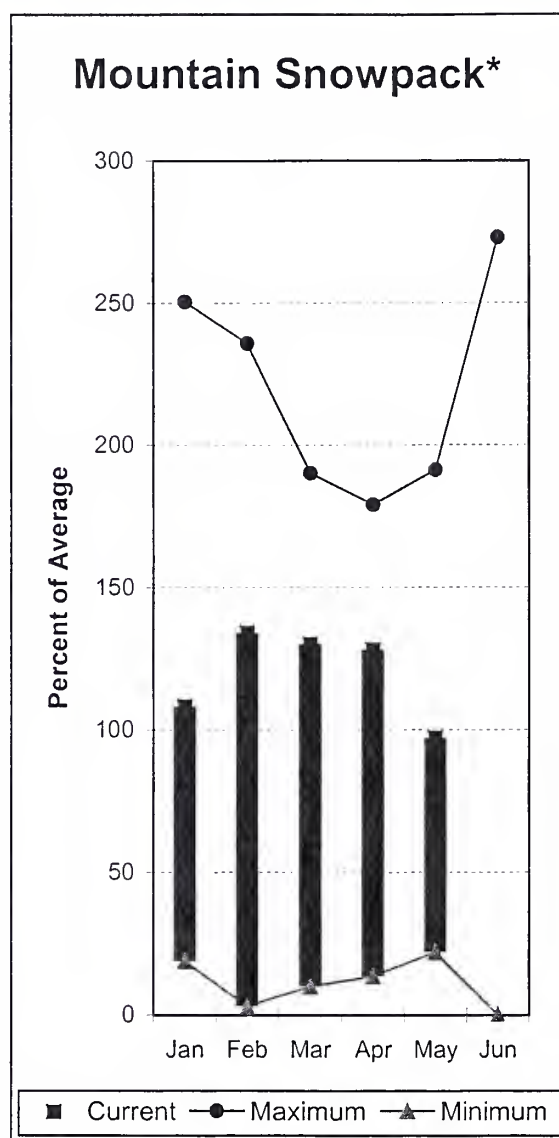
WHITE-GREEN-PUYALLUP BASINS

Percent of Average

May 1, 2000

Snowpack - 122%
Precipitation - 96%

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 98% for Cedar River near Cedar Falls; 97% for Rex River and 106% for South Fork Tolt. April precipitation was 91% of average, bringing water-year-to-date to 109% of average. May 1 average snow cover in Cedar River Basin was 92%, Tolt River Basin was 95%, Snoqualmie River Basin was 108%, and Skykomish River Basin was 94%. Stevens Pass SNOTEL, at 4070 feet, had 31 inches of water content. Average May 1 water content at Stevens Pass is 32.1 inches. Average temperatures were slightly above normal for the past month.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - May 1, 2000

Forecast Point		Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						
			=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
			90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====			=====						
CEDAR near Cedar Falls	MAY-JUL	43	50	55	98	60	67	56	
	MAY-SEP	49	57	62	98	68	76	64	
REX near Cedar Falls	MAY-JUL	13.1	16.4	18.6	97	21	24	19.2	
	MAY-SEP	15.3	19.0	22	97	24	28	22	
CEDAR RIVER at Cedar Falls	MAY-JUL	23	41	54	99	66	85	54	
	MAY-SEP	20	42	56	102	71	92	55	
SOUTH FORK TOLT near Index	MAY-JUL	9.3	10.8	11.8	104	12.8	14.3	11.4	
	MAY-SEP	11.3	13.2	14.5	104	15.8	17.7	13.9	

CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of April

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - May 1, 2000

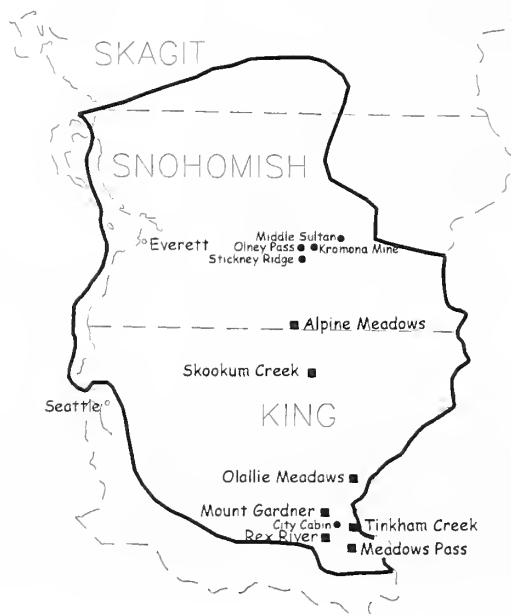
Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
CEDAR RIVER	4	55	92
TOLT RIVER	1	102	95
SNOQUALMIE RIVER	4	79	108
SKYKOMISH RIVER	2	85	94

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

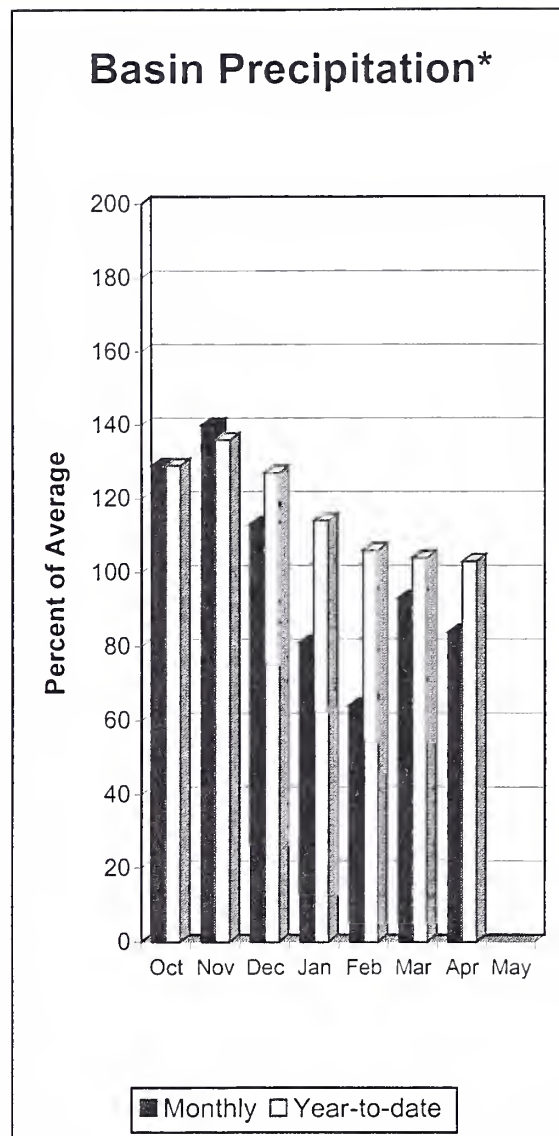
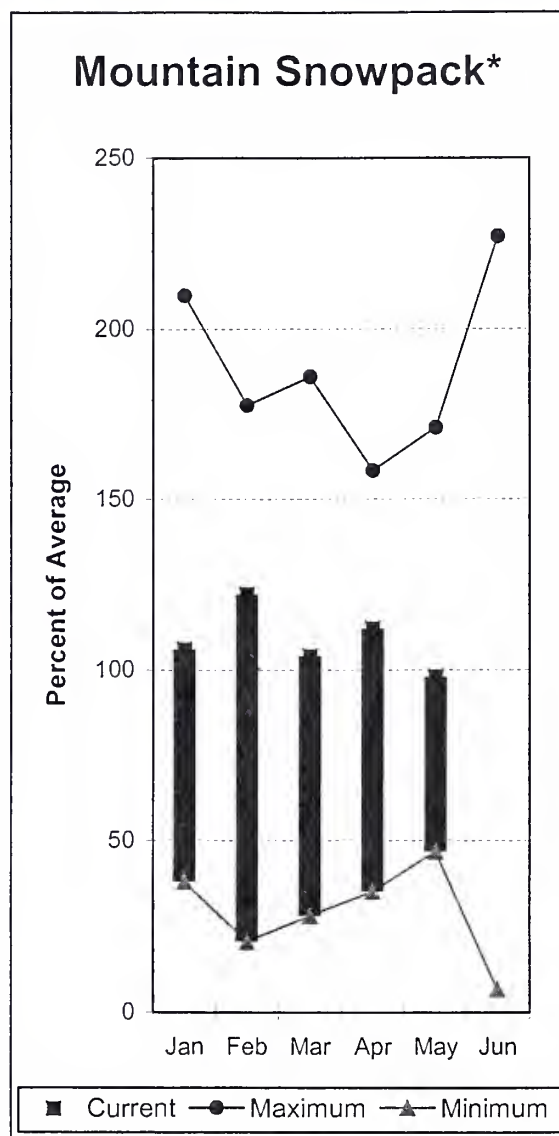
The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

CENTRAL PUGET BASIN
Percent of Average
May 1, 2000
 Snowpack - 97%
 Precipitation - 109%



North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow is 94% of average for the spring and summer period. April streamflow in Skagit River was 122% of average. Other forecast points included Baker River at 102% and Thunder Creek at 95% of average. Basin-wide precipitation for April was 84% of average, bringing water-year-to-date to 103% of average. May 1 average snow cover in Skagit River Basin was 83%, and Nooksack River Basin was 99%. Rainy Pass SNOTEL, at 4,780 feet, had 33.3 inches of water content. Average May 1 water content is 36.8 inches. May 1, Skagit River, reservoir storage was 111% of average and 51% of capacity. Average April temperatures were near normal for the basin.

For more information contact your local Natural Resources Conservation Service office.

North Puget Sound River Basins

Streamflow Forecasts - May 1, 2000

Forecast Point	Forecast Period	Future Conditions						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
THUNDER CREEK near Newhalem	MAY-JUL	172	187	198	95	209	224	209
	MAY-SEP	267	283	293	95	303	319	308
SKAGIT at Newhalem (2)	MAY-JUL	1375	1461	1520	92	1579	1665	1649
	MAY-SEP	1688	1782	1845	94	1908	2002	1961
BAKER RIVER near Concrete	MAY-JUL	622	673	707	101	741	792	703
	MAY-SEP	819	894	946	102	998	1073	930

NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of April					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - May 1, 2000			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROSS	1404.1	713.4	397.0	644.4	SKAGIT RIVER	11	47	83
DIABLO RESERVOIR		NO REPORT			BAKER RIVER	9	78	112
GORGE RESERVOIR		NO REPORT			NOOKSACK RIVER	2	55	99

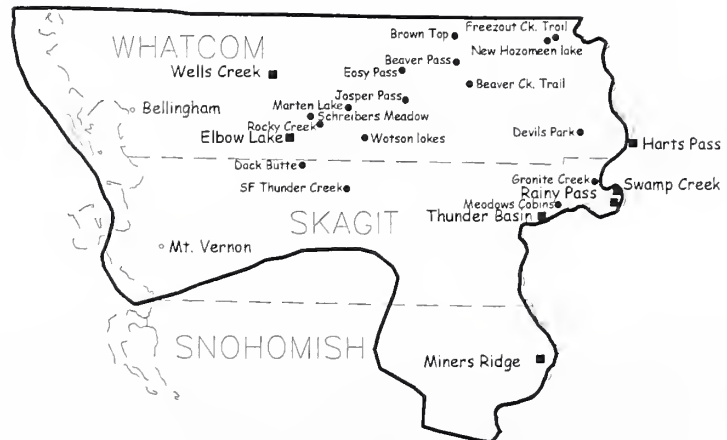
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

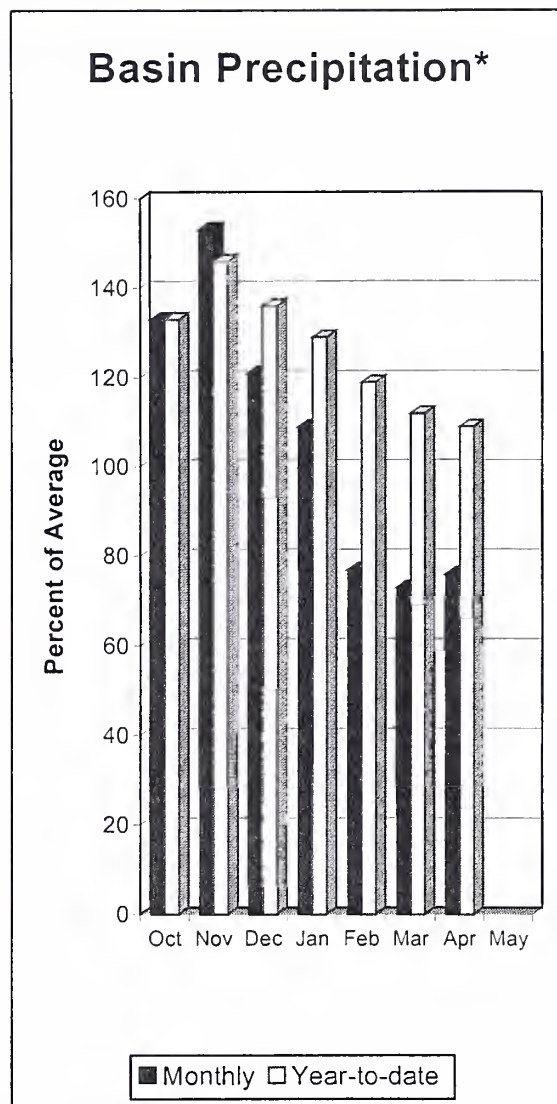
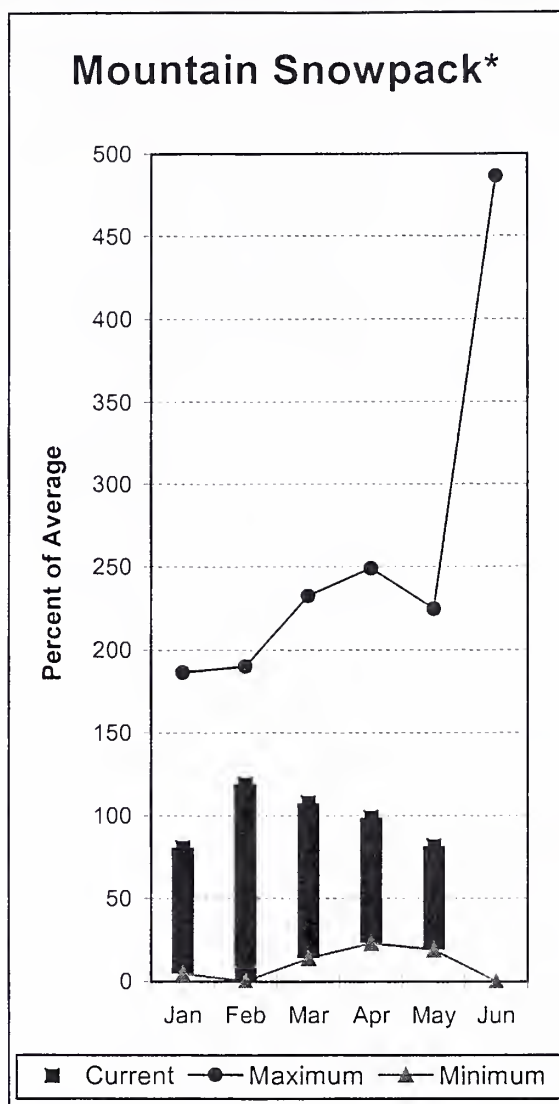
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

NORTH PUGET BASIN Percent of Average May 1, 2000

Snowpack - 98%
 Precipitation - 103%
 Reservoir - 111%



Olympic Peninsula River Basins



*Based on selected stations

May average streamflow forecasts for Dungeness River is 92% and Elwah River is 93%. Big Quilcene and Wynoochee rivers can expect near average runoff this summer also. April precipitation was 76% of average. Precipitation has accumulated at 109% of average for the water-year. April precipitation at Quillayute was 7.06 inches. The thirty-year average for April is 7.15 inches. May 1 snow cover in the Olympic Basin was at 82% of average. The Mount Crag SNOTEL near Quilcene had 27.8 inches of snow-water-equivalent on May 1. Average for this site is 22.4 inches. Temperatures were 1-2 degrees above average for the month.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - May 1, 2000

=====								
		<===== Drier ===== Future Conditions ===== Wetter =====>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
=====								
DUNGENESS near Sequim	MAY-SEP	109	117	123	92	129	137	134
	MAY-JUL	88	94	98	92	102	108	107
=====								
ELWHA near Port Angeles	MAY-SEP	360	387	405	93	423	450	434
	MAY-JUL	289	311	325	93	339	361	348

OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of April					OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - May 1, 2000			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					OLYMPIC PENINSULA	4	33	82
					ELWHA RIVER	1	23	56
					MORSE CREEK	1	45	85
					DUNGENESS RIVER	1	14	56
					QUILCENE RIVER	1	56	124
					WYNOOCHEE RIVER	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.

(2) - The value is natural flow - actual flow may be affected by upstream water management.

OLYMPIC PENINSULA BASIN
Percent of Average
May 1, 2000
Snowpack - 82%
Precipitation - 109%



Issued by

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Chief
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U.S. Department of Agriculture

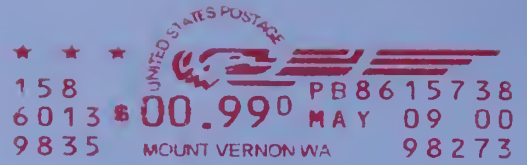
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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Ministry of the Environment Investigations Branch, Victoria, British Columbia
State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County
Private	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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Basin Outlook Report**
Natural Resources Conservation Service
Spokane, WA

